

APPENDIX A

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.046	0.88	0.79	0.00	0.00	1.20	0.18	L34676	X11 protein gene; X11 protein Neurons binds amyloid precursor protein; receptor trafficking; +1543 may regulate the processing of amyloid precursor protein to the amyloid beta peptide	
0.006	0.95	0.27	0.28	0.27	1.23	0.11	U65418	Netrin-1; axon outgrowth- CNS promoting protein; guidance molecule; guides growing axons in development	
<0.001	1.10	0.02	0.00	0.00	1.09	0.19	X97817	Semaphorin F; involved in axonal guidance	Early embryogenesis
<0.001	1.02	0.01	0.04	0.08	1.06	0.09	L38580	Galanin; a neuropeptide; Released by hepatic nerves; CNS and enhances hepatic glucose peripheral organs including pituitary, production; present in hepatic pancreas, small and large intestine, adrenal gland, lung, tongue, testes, ovary-fallopian tubes, and uterus; not detectable in heart, liver, kidney, urinary bladder or skeletal muscle	
<0.001	1.14	0.16	0.02	0.03	1.14	0.16	X92122	UDP-galactose 4-epimerase; key enzyme in cerebroside and sulfatide biosynthesis; glycosphingolipids; abundant in myelin	CNS and peripheral nervous system; poorly distributed
<0.001	1.10	0.10	0.06	0.10	1.16	0.18	U56650	Neurexophilin 2 (Nxph-2); +120 Brain neuronal glycoprotein; binds to alpha-neurexins	
<0.001	0.99	0.22	0.04	0.06	1.04	0.06	L42340	Sodium channel 27	Brain; tissue distribution and protein poorly characterized
<0.001	1.16	0.27	0.03	0.06	1.11	0.11	X61449	Brain expressed anonymous cDNA	Brain; expression poorly characterized
<0.001	1.13	0.17	0.01	0.02	1.15	0.20	X92352	Bpx, strong homology to genes encoding nucleosome assembly proteins; poorly characterized	Brain; tissue distribution poorly characterized

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.001	1.29	0.29	0.03	0.05	1.22	0.22	X07215	PLP; proteolipid protein, main CNS integral protein of the myelin	
<0.001	1.17	0.19	0.03	0.06	1.16	0.25	Y12257	Glutamic acid decarboxylase 67 kD.	Brain, islets; isozyme of liver form
0.001	1.36	0.15	0.00	0.00	1.09	0.35	ET63017	Cadherin-8, adhesion molecule	MCad8 expression is restricted to particular subdivisions of the early central nervous system (CNS) and to the thymus

0.001	1.19	0.35	0.09	0.15	1.43	0.12	ET61642	Inward rectifier channel 2 (GIRK2)	potassium Neurons
0.001	1.18	0.25	0.11	0.19	1.16	0.21	X97281	K + channel beta-subunit, channel	Ion Brain and Kidney
<0.001	1.06	0.07	0.10	0.12	1.08	0.08	Y09108	SNS-TTXi sodium channel, ion channel; small-diameter sensory neurons associated with unmyelinated axons express a tetrodotoxin-insensitive (TTXi) voltage-gated sodium channel (VGSC); may play an important role in the transmission of nociceptive information to the spinal cord	
0.005	1.26	0.03	0.15	0.26	1.16	0.39	M30440	Potassium channel gene (MK2); Shaker subfamily	T cells; myelinating Schwann cells
0.018	1.78	0.50	0.40	0.46	1.10	0.21	S80989	NK-related homeobox gene (Nkx-5.2); cell type specification of neuronal cells	Developing CNS and ear in E13.5 embryos; cell type specification of neuronal cells
0.011	1.00	0.21	0.50	0.24	1.22	0.13	X83577	K-glypican; cell surface heparin sulfate proteoglycan; suggested role in regulating cell cycle progression during the transition of neural cells from proliferation to differentiation.	neural cells
0.044	1.12	0.26	0.61	0.27	1.32	0.28	U36757	Thrombin receptor transmembrane G-protein coupled receptor; activated by protease cleavage; thrombin is a	embryo major sites are tubular cells in kidney and neuroepithelial cells in brain; neurons

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0.004	1.02	0.02	0.53	0.17	1.02	0.12	M33467	serine protease generated by the activation of the blood coagulation cascade following vessel injury; thrombin acts as a mitogen, apoptosis inducer and regulator of inflammation	Class-V Adult germ line cells; early embryo; Dilute lethal-20J; myosin; unique type of myosin oocyte during oogenesis; enriched in motor; role in vesicular brain; neurons; melanocytes
0.000	1.31	0.06	0.00	0.00	0.98	0.06	ET62839	membrane traffic through actin rich regions of the cytoplasm; transport endoplasmic reticulum vesicles in neurons and pigment granules in melanocytes	lymphocytes; dendritic cells, (PIRA1); activating receptor on myeloid-lineage cells.
0.015	1.14	0.15	0.20	0.20	1.36	0.55	ET63156	murine B lymphocytes; dendritic cells; myeloid-lineage cells.	Mouse homolog of the Drosophila Neuronal and hematopoietic cell Disabled (Dab) protein; lines; growing nerves of embryonic MDab217; an adaptor molecule mice functioning in neural development.
0.001	1.21	0.21	0.05	0.09	1.37	0.36	ET63385	Connexin30 (CX30); gap junction protein that forms transmembranous gap junction channels that connect adjacent cells	Brain; skin
0.043	1.44	0.43	0.33	0.56	1.40	0.38	ET63410	Semaphorin Hv; a novel member of semaphorin gene family; secreted glycoprotein involved in embryonic development	Developing lungs ; skeletal elements; of semaphorin gene family; neural tubes
<0.001	1.12	0.04	0.09	0.15	1.12	0.21	X53257	Neurotrophin-3 (NT-3) ; secreted protein; binds high affinity receptor trk C	Liver parenchymal cells olfactory bulb cerebellum; septum and hippocampus; thymus, heart, diaphragm, pancreas, spleen, kidney, adrenal gland

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0.004	1.16	0.28	0.22	0.26	1.22	0.19	ET61665	Discs-large homolog (dlgh1); important role in the localization and function of glutamate receptors and K(+) channels; member of the MAGUK (membrane associated guanylate kinase homologue) family of proteins	Localized to synapse; epithelial cells
0.001	1.05	0.20	0.16	0.27	1.32	0.15	ET63395	Axonemal dynein heavy chain (mdhc1); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
0	1.21	0.17	0.00	0.00	0.95	0.09	ET63399	Axonemal dynein heavy chain (mdhc3); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
0.013	1.09	0.08	0.21	0.36	1.30	0.42	ET63402	Axonemal dynein heavy chain (mdhc6); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
0.002	1.07	0.09	0.24	0.21	1.14	0.23	ET63405	Axonemal dynein heavy chain (mdhc9); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main	Brain, trachea, testis

P	CR	std	CON	std	SW	std	GenBank	Description components of motor ATPase complexes called dyneins	Location
0	1.02	0.08	0.05	0.09	1.14	0.08	Y08485	Synaptonemal complex protein 3; Testis; part of the lateral element of the synaptonemal complex; meiosis-specific protein structure testis essential for synapsis of homologous chromosomes	Testis; synaptonemal complex
0.007	1.20	0.53	0.00	0.00	1.28	0.30	L28756	Gonadotropin-releasing hormone receptor; GnRH activates all four steroid-dependent tumor tissues MAPK cascades by a PKC-dependent mechanism.	Anterior pituitary, brain and reproductive organs as well as many
0.003	1.18	0.24	0.29	0.23	1.09	0.10	Z46845	Preproglucagon; peptide 1 and II; vasoactive intestinal peptide (VIP)/secretin/glucagon/GHRH family of neuropeptides	Pancreatic alpha cells, ileum + K41.
<0.001	1.09	0.15	0.08	0.11	1.10	0.15	U66201	Fibroblast growth factor homologous factor 1 (FGF-1); nervous system development and function	expression in brain and skeletal muscle
<0.001	1.13	0.15	0.00	0.00	0.99	0.18	Z27088	Relaxin precursor (rlx); member of insulin gene family; remodeling of collagen and uterine contractility	relaxin; Brain, uterus, prostate gland, pancreas and kidney, with other tissues giving weak signals
0.005	1.20	0.24	0.25	0.22	1.23	0.29	ET62740	Ankyrin-3 (Ank3); ankyrin(G); implicated in clustering; NaCh and neurofascin at axon initial segments and is required for physiological levels of sodium channel activity	Widely distributed, especially in epithelial tissues, muscle, and neuronal axons
0.007	1.37	0.08	0.34	0.35	1.05	0.25	U48397	Mercurial-insensitive channel 1 (mMIWC1);	Brain, eye, lung, kidney, heart, allows muscle

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0.004	1.16	0.28	0.22	0.26	1.22	0.19	ET61665	water and small solutes to pass Discs-large tumor suppressor homologue (digh1) gene; important role in the localization and function of glutamate receptors and K(+) channels; member of the MAGUK (membrane associated guanylate kinase homologue ues) family of proteins	Localized to synapse; epithelial cells
0.005	1.26	0.03	0.15	0.26	1.16	0.39	M30440	Potassium channel gene (MK2); shaker subfamily Y receptor	T cells; myelinating Schwann cells
0	1.00	0.15	0.02	0.03	1.15	0.10	U58367	Neuropeptide Y Y5/Y6/Y2b (referred to as both cells Y5 and Y2b, has now been designated as Y6 in literature); (NPY-Y6); neuropeptide Y is an important regulator of energy balance in mammals through its orexigenic, antithermogenic, and insulin secretagogue actions; expressed abundantly in the central nervous system; NPY receptors mediate a variety of physiological responses including feeding and vasoconstriction	Neurons, vascular smooth muscle
0.000	1.06	0.15	0.00	0.00	1.56	0.37	ET61090	Ryanodine receptor type-3; intracellular Ca2+ channels	Skeletal and smooth muscle, CNS
0.006	0.96	0.24	0.18	0.32	1.10	0.10	ET62978	Neosin/lark; RNA-binding protein; Drosophila homologue encodes an element of the clock output pathway regulating adult eclosion (circadian rhythm)	Uncharacterized, probably neuronal
0.001	1.24	0.31	0.00	0.00	1.18	0.27	D50095	Histamine H1 receptor; binding protein-coupled receptor; coupled to phosphoinositide turnover-calcium mobilization	GTP- Liver, brain, spleen (ubiquitous)

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0	1.09	0.16	0.00	0.00	1.15	0.13	U60330	signaling pathway; regulates insulin-like growth factor I expression and cell proliferation; modulates IL-6 action; regulates physiological functions in neurons; regulates transport of thyroxine into hepatocytes	cell Liver, neurons, broad tissue
								Ki antigen (PA28 gamma); cell proliferation; the interferon-gamma (IFN-gamma)-inducible PA28 activator complex enhances the generation of class I binding peptides by altering the cleavage pattern of the proteasome	
0	1.09	0.16	0.00	0.00	1.18	0.18	Z31663	Activin type IB receptor; limb development; expressed vibrissae, ribs, shoulders, coincidentally with the formation of the last phalanx of each digit	Embryo: brain, some ganglia, lungs, body wall, stomach, olfactory region, eye, tooth, primordium, esophagus, mesonephros, dorsal root ganglia and is strongly expressed in the spinal cord.

0.001	1.02	0.35	0.00	0.00	1.31	0.16	U33535	Fibroblast growth factor 9 (FGF-9); autocrine and paracrine growth factor; prevents cell death in cultured motoneurons; plays a role in embryonic neural cell differentiation; areas including intermediate thrombopoietic activity (acts on megakaryocytes)	neurons, glial cells, epithelial cells, brain, kidney, prostate (stromal cells); in embryogenesis expressed in many areas including intermediate
0.008	1.27	0.33	0.27	0.27	1.04	0.13	X04405	Myoglobin gene; small heme protein; binds gaseous ligands such as O2, CO and NO	Myoglobin gene; small globular muscle protein; binds gaseous ligands such as O2, CO and NO
0.002	1.32	0.20	0.00	0.00	0.80	0.39	X92523	Skeletal muscle-specific calpain (cnp3); intracellular calcium-variants in smooth muscles during	Skeletal muscle; differentially spliced variants in smooth muscles during

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0.001	1.14	0.15	0.15	0.27	1.17	0.15	M92416	dependant cysteine proteinase; fetal period tissue specific myofibrogenesis, modifies ryanodine receptor Ca2+ release channel Fibroblast growth factor (Fgf6); Skeletal muscle Fgf6 is the only known member of the FGF family whose expression is restricted to the muscle cell lineage during development	
0.012	1.33	0.35	0.00	0.00	1.45	0.67	M14537	Nicotinic acetylcholine receptor beta subunit	Skeletal muscle
0.003	1.09	0.12	0.14	0.24	1.11	0.31	X55718	Nicotinic acetylcholine receptor α subunit; embryonic	Skeletal muscle
0.003	1.08	0.04	0.00	0.00	1.19	0.47	Z67747	ZT3 zinc finger factor	Skeletal, cardiac muscle, and spleen in adult
0.01	1.15	0.12	0.02	0.04	1.29	0.62	U37353	Protein phosphatase regulatory subunit	2A Skeletal and heart muscle
0.005	0.93	0.18	0.00	0.00	1.14	0.14	ET62103	Nebulin; a family of giant myofibrillar proteins	
0.002	1.18	0.18	0.24	0.21	1.14	0.22	ET62883	Skeletal muscle chloride channel	Skeletal muscle
0.023	1.46	0.58	0.00	0.00	1.16	0.61	ET63019	Skeletal muscle ryanodine receptor; calcium release channel	Skeletal muscle
0	1.02	0.07	0.00	0.00	1.27	0.23	ET62998	Dystrobrevin; postsynaptic protein; important in the formation and maintenance of the mammalian neuromuscular junctions.	
0.001	1.19	0.25	0.25	0.05	1.21	0.20	ET62865	Alpha 4 integrin; a leukocyte glycoprotein involved in both cell-extracellular matrix and cell-cell interaction	Skeletal muscle
0	0.98	0.21	0.00	0.00	1.25	0.05	U49393	Sarcoendoplasmic reticulum Ca2+ ATPase; ion pump	Skeletal, smooth, and cardiac muscle
0.005	1.20	0.24	0.25	0.22	1.23	0.29	ET62740	Ankyrin-3 (Ank3); also called ankyrin(G); skeletal muscle epithelial protein implicated in Na(+) neuronal axons	Widely distributed, especially in muscle, and

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0.007	1.37	0.08	0.34	0.35	1.05	0.25	U48397	channel clustering; essential for clustering NaCh and neurofascin at axon initial segments and is required for physiological levels of sodium channel activity. Mercurial-insensitive channel 1 (mMWC1); allows muscle water and small solutes to pass	water Brain, eye, lung, kidney, heart,
0.000	1.06	0.15	0.00	0.00	1.56	0.37	ET61090	Ryanodine receptor type-3; Skeletal and smooth muscle, CNS intracellular Ca2+ channels	
0.005	1.17	0.23	0.43	0.16	1.24	0.23	X83932	Ryanodine receptor type 1 (RYR1 gene); intracellular calcium channel	Skeletal muscle
0.004	1.25	0.48	0.00	0.00	1.28	0.24	X80417	MB-IRK2 (second class of inward rectifier potassium channels); ion channel	Heart, kidney, and skeletal muscle

0	1.00	0.15	0.02	0.03	1.15	0.10	U58367	Neuropeptide Y receptor Y5/Y6/Y2b (referred to as both cells Y5 and Y2b, has now been designated as Y6 in literature); important regulator of energy balance in mammals through its orexigenic, antithermogenic, and insulin secretagogue actions; expressed abundantly in the central nervous system; NPY receptors mediate a variety of physiological responses including feeding and vasoconstriction	Neurons, vascular smooth muscle
0.021	1.40	0.24	0.00	0.00	0.79	0.71	J03293	Phosphorylase kinase, gamma subunit; phosphorylates glycogen subunit that the skeletal muscle gamma subunit activates phosphorylase, the enzyme that initiates the catabolism of glycogen in skeletal muscle	Heart, skeletal and cardiac muscle and (not in liver and the liver gamma subunit does not cross-hybridize with cDNA)

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0.044	1.12	0.26	0.61	0.27	1.32	0.28	U36757	Thrombin receptor (PAR-1); Blood, platelets, monocytes; Transmembrane G-protein endothelial cells; cardiomyocytes; coupled receptor; activated by neuronal and glial cells serine protease cleavage; thrombin is a serine protease generated by the activation of the blood coagulation cascade following vessel injury; thrombin acts as a mitogen and apoptosis inducer	
0.000	1.06	0.15	0.00	0.00	1.56	0.37	ET61090	Ryanodine receptor type-3; Skeletal and smooth muscle, CNS intracellular Ca2+ channels	
0.013	0.77	0.51	0.00	0.00	1.10	0.15	L12460	Mouse cyclic GMP-dependent protein kinase II; signal transduction	
0.000	0.96	0.15	0.00	0.00	1.48	0.12	Y00850	Mouse Kruppel-like gene (MKI2); Restricted to central and peripheral differentiation and/or phenotypic neurons of adults	
0.022	1.13	0.08	0.40	0.24	1.04	0.35	Z23143	Activin receptor-like kinase-6; Developing mesenchyme, muscle, receptors for morphogenic blood vessels, CNS, ear, eye, proteins; serine-threonine kinase epithelium	
0.044	1.26	0.38	0.44	0.39	1.12	0.12	X66983	Rck gene; protein kinase Photoreceptors, olfactory receptors, respiratory and choroid plexus epithelial cells, germ cells	
0.048	1.79	1.06	0.00	0.00	1.18	0.54	U33005	Tbc1; domains homologous to Not well-characterized; tre-2 oncogene and yeast mitosis hematopoietic cells, testis and regulators BUB2 and cdc16; kidney nuclear localization	
<0.001	0.98	0.18	0.03	0.03	1.08	0.11	Y12293	LUN transcription factor; Lung bronchiolar epithelium and type forkhead domain identical to the II pneumocytes; tissue distribution HFH8 gene; C-terminal region not well characterized similar to the HFH8 gene	
<0.001	1.18	0.20	0.00	0.00	1.04	0.15	U48721	Zinc finger protein 60 (ZFP60); Expressed transiently during in vitro muscle differentiation	
0.003	1.43	0.41	0.07	0.12	1.33	0.34	D13801	Kruppel associated boxes DNA-binding transcription factor CNS; tissue distribution not well (Embl); class VI POU domain characterized	

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0.028	1.07	0.69	0.00	0.00	1.06	0.09	X63963	Paired box protein transcription factor	(Pax-6); Development of eye and CNS
<0.001	1.07	0.02	0.00	0.00	1.07	0.19	U76208	Neurogenin 3 transcription factor; related bHLH protein	(ngn3); CNS and early precursors of endocrine cells
0.003	1.15	0.31	0.07	0.12	1.28	0.32	U17252	Metabotropic glutamate receptor 8; G-protein coupled	neuroD-pancreatic (embryogenesis) CNS, glial cells; retina and olfactory bulb; stellate/basket cells
<0.001	1.02	0.02	0.04	0.06	1.06	0.17	U14420	GABA-benzodiazepine receptor beta-3 subunit; link binding of GABA (gamma-aminobutyric acid) to inhibitory chloride flux	CNS
<0.001	1.11	0.22	0.09	0.16	1.07	0.07	X66118	Glutamate receptor subunit GluR5-2c.	Brain
0.001	1.11	0.33	0.06	0.10	1.05	0.04	Z14224	5HT1E beta serotonin receptor; protein-coupled receptor	G Brain; tissue distribution not well characterized
0.001	1.21	0.29	0.02	0.03	1.26	0.29	X79082	MDK1 mouse developmental kinase 1; member of receptor tyrosine kinase family	Brain, testes and spleen
<0.001	1.20	0.22	0.01	0.01	1.30	0.27	Z48757	Intestinal tyrosine kinase	protein Mammary gland and intestine
0.001	1.11	0.16	0.00	0.00	1.19	0.37	X58287	MR-PTPmu; receptor-like tyrosine phosphatase	protein Lung, brain, heart
<0.001	1.11	0.17	0.00	0.00	1.14	0.14	M61000	Bombesin/gastrin-releasing peptide receptor; member of the G protein-coupled receptor family	Fibroblasts
0.001	1.20	0.18	0.09	0.16	1.00	0.25	ET61461	G-protein coupled receptor	Unknown
0.009	1.14	0.10	0.50	0.18	0.96	0.20	ET63226	poorly characterized Nude gene (Whn) transcription factor	winged helix in adult thymus and skin; embryonic family; nails, nasal passages, tongue, palate
								modulates growth factor and teeth production by differentiating epithelial cells including keratinocytes; also controls development of the immune system in thymus.	
								THYROTROPIN-RELEASING HORMONE-SECRETING FACTOR	
0.007	1.09	0.08	0.39	0.27	1.11	0.20	M22740	Thyrotropin beta-subunit	(TSH- Pituitary

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0.007	1.00	0.11	0.39	0.27	1.11	0.12	U12932	Follicle stimulating hormone beta subunit (FSH-beta, gonadotropin); stimulates development of follicle and spermatogenesis	of the anterior pituitary
0.004	0.91	0.33	0.21	0.34	1.46	0.09	U25145	Luteinizing hormone beta subunit; regulation of reproduction	of the anterior pituitary
0.001	1.06	0.09	0.00	0.00	0.98	0.33	X51683	T gene (Brachyury gene); sequence specific DNA-binding protein that functions as morphogenesis a transcription activator; required for morphogenesis of mesoderm-derived structures, control of gastrulation; development of the heart; perhaps limb formation	embryogenesis; mesoderm
0.001	1.09	0.10	0.00	0.00	1.17	0.37	Z15103	Mox-1; homeobox gene; marker of epithelial-mesenchymal patterning in mouse embryos	Early embryogenesis; mesoderm
0.001	1.08	0.08	0.22	0.18	0.91	0.21	X86368	transformation Fkh-2; a forkhead/winged helix transcription factor	Numerous tissues of embryo, including paraxial mesoderm, somites, branchial arches, vibrissae, central nervous system and kidney
<0.001	1.10	0.02	0.00	0.00	1.09	0.19	X97817	Semaphorin F; involved in axonal guidance	Early embryogenesis
0.018	1.78	0.50	0.40	0.46	1.10	0.21	S80989	NK-related homeobox gene (Nkx-5.2); cell type specification of neuronal cells	Developing CNS and ear in E13.5
0.011	1.00	0.21	0.50	0.24	1.22	0.13	X83577	K-glypican; cell surface heparin sulfate proteoglycan; suggested role in regulating cell cycle progression during the transition of neural cells from proliferation to differentiation.	major sites are tubular cells in kidney and neuroepithelial cells in brain; neurons
0	1.03	0.03	0.11	0.10	1.08	0.21	M34094	Retinoic acid-responsive (MK); growth factor	Mid-gestation mouse embryogenesis; not reported in normal adult liver

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0	1.11	0.09	0.00	0.00	1.03	0.15	M93128	Homeobox transcription factor Embryo (EVX2); limb development	
0	1.04	0.15	0.13	0.12	1.16	0.10	X16510	Hox 3.3; homeobox transcription factor; embryogenesis; haematopoiesis	Spleen, bone marrow
0	1.09	0.16	0.00	0.00	1.18	0.18	Z31663	Activin type IB receptor; limb development; coincidently with the formation of the last phalanx of each digit	Embryo: brain, some ganglia, expressed vibrissae, lungs, body wall, stomach, ribs, limbs, shoulders, olfactory region, eye, tooth primordium, esophagus, mesonephros, dorsal root ganglia and is strongly expressed in the spinal cord.
0	0.99	0.06	0.12	0.20	1.10	0.13	D78175	Atrial natriuretic peptide clearance receptor (ANP-CR or NPRC); membrane protein; modulates availability of natriuretic peptides at target organs; activation of G protein-coupled signaling system; endothelial permeability; may modulate angiogenesis by inhibition of vascular endothelial cell growth factor; modulates activity of mitogen-activated protein kinase (MAPK, regulation of cell proliferation)	Epithelial and endothelial cells; lung (aortic smooth muscle cells), heart (aortic smooth muscle cells), placenta

NOT REPORTED IN LIVER OF THE FISH									
0.000	1.43	0.07	0.18	0.21	1.05	0.22	Z38118	Synaptonemal complex protein 1 (SCP1); pairing of chromosomes during meiosis	Testis
0.003	0.86	0.29	0.11	0.19	1.21	0.19	U61085	Thiazide-sensitive sodium chloride cotransporter;	Sodium and Kidney
0.024	1.20	0.36	0.34	0.30	1.46	0.44	X95226	Dystrobrevin; transmembrane protein formation and maintenance of mammalian	CNS

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0.000	1.38	0.32	0.00	0.00	0.96	0.10	U73915	neuromuscular junction Membrane metalloendopeptidase homologue (Pex); mineralization of extracellular matrix by osteoclasts	Kidney, bone
0.011	1.10	0.10	0.35	0.38	1.13	0.13	M10114	Kappa-casein; milk protein	Mammary glands
0.037	1.32	0.29	0.14	0.24	0.90	0.63	X99251	Repetin; similar to intermediate filament-associated proteins profilaggrin and trichohyalin; expression during late epidermal differentiation	Epithelia of forestomach and tongue
0.006	1.26	0.18	0.30	0.22	0.98	0.29	U66204	Fibroblast growth factor CNS homologous factor 4 (FHF-4); involved in nervous system development and function	
0.004	1.06	0.10	0.36	0.27	1.10	0.10	M36516	Zinc finger proteins (mkr3.4.5)	Whole embryo, testes in adult
0.034	0.96	0.30	0.32	0.40	1.14	0.12	X86000	N-glycan alpha 2,8- sialyltransferase (ST5ia IV)	Lung, heart, spleen, brain
0.025	1.21	0.11	0.40	0.36	1.12	0.33	M25513	Rod transducin alpha subunit (Tr- alpha); couples photolysis of heart rhodopsin to activation of cGMP phosphodiesterase; visual signal cascade	Retina, not reported in liver, kidney.
0.008	1.18	0.51	0.23	0.40	1.82	0.25	X12875	Neural cell adhesion molecule L1 (N-CAM L1); involved in Ca2+ independent neural adhesion	Nerve cells
0.049	1.44	0.41	0.49	0.38	1.12	0.30	Y00500	Glandular kallikrein mGK-5; serine protease	Salivary glands; possible crosshybridization with liver kallikreins
0.030	1.18	0.07	0.29	0.45	0.85	0.25	X63100	Connexin45; gap junction protein; ion exchange channels	Lung, brain, heart, intestine; embryonic brain, skin, and kidney
0.036	1.30	0.18	0.41	0.45	1.06	0.28	ET62673	Hyaluronan synthase 3; hyaluron, polymers (extracellular) glycosaminoglycan; can be remodeling; reduces cell motility; hyaluron found throughout the	Eyes, kidney, chondrocytes

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.017	1.81	0.92	0.00	0.00	1.12	0.11	D87471	extracellular matrix, especially in soft connective tissue Actin capping protein; germ cell Haploid germ cells of testis gene 3 (gsg3); homologue of somatic cell type actin capping protein alpha (ACP alpha)	
0.019	1.16	0.14	0.48	0.30	1.26	0.29	J04847	PL10; ATP-dependent helicase; suggested role in spermatogenesis; homologous to eIF-4A	RNA Testis (not reported in liver)
<0.001	1.09	0.14	0.01	0.02	1.19	0.29	Z46299	Sp17 gene for sperm protein; calmodulin binding	specific Mammalian testis; sperm-specific
<0.001	1.05	0.05	0.14	0.23	1.08	0.09	X72697	Meiosis-specific transcriptional activator function?	XMR; Testis; lymphoid cell lineages; nuclei of spermatocytes, early in the prophase of the first meiotic division, and later becomes concentrated in the XY nuclear subregion
<0.001	1.20	0.18	0.02	0.02	1.07	0.26	M19413	Testicular alpha tubulin	Testis
<0.001	1.17	0.20	0.08	0.14	1.01	0.01	X96606	Ott, mouse X-linked multigene family	Expressed during meiosis
0.002	1.14	0.31	0.13	0.22	1.23	0.10	D13664	Osteoblast specific factor (OSF-2); extracellular matrix?	2 Osteoblastic cells
0.006	1.33	0.43	0.09	0.15	1.40	0.39	X15830	Neuroendocrine secretory protein present in serum; proteolytic conversion and activation of convertases 2 in the endoplasmic reticulum	7B2; Widely distributed neuroendocrine cells; neurons, endocrine cells; cells producing insulin and melanosomes
0.440	1.10	0.80	0.53	0.59	1.27	0.67	D38162	Alpha1(XI) collagen	Embryo cartilaginous tissue, brain, structural integrity; essential for heart, tongue, intestine, and udd
0.002	1.01	0.03	0.43	0.37	1.56	0.04	M35732	normal cartilage development Seminal vesicle secretory protein IV (SVS IV); major secretory protein of seminal vesicles; regulation of the immune response, blood coagulation;	vesicles Seminal vesicles

P	CR	std	CON	std	SW	std	GenBank	Description inflammatory reaction;	Location
0.043	1.87	0.72	0.00	0.00	0.97	0.95	X05260	Y chromosome RNA transcript Testis (reported not present in adult expressed in testis (pY353/B); liver) protein product uncharacterized; sex determination factor?	
0.046	2.86	0.65	0.00	0.00	1.46	1.74	U96701	Intracellular serine proteinase inhibitor (mBM2A); serine proteinase inhibitors (serpins) are regulators of extracellular proteolysis	Predominantly in testis
0.019	1.42	0.39	0.58	0.06	1.11	0.20	ET63122	Beta-Tectorin; extracellular matrix protein	Inner ear; expressed by cells in and surrounding the mechanosensory epithelia in embryo and adult
0.005	1.00	0.05	0.25	0.31	1.15	0.21	X04724	Preproinsulin gene II	Pancreas and islets
0.004	1.21	0.39	0.06	0.11	1.63	0.46	X04725	Preproinsulin gene I	Pancreas and islets
0.002	1.51	0.44	0.00	0.00	1.20	0.32	ET63205	Odorant binding protein Ib	Nasal epithelium.
0	1.18	0.33	0.00	0.00	1.51	0.21	ET63408	Capping protein beta 3 subunit; a novel isoform of actin-binding protein; a component of the cytoskeletal calyx of the mammalian sperm head.	Spermiogenesis
0.045	1.24	0.21	0.00	0.00	0.93	0.81	X58169	T-complex responder (Tcpr-10); Tcp-10 gene has been established as a molecular candidate for the T complex responder locus which plays a central role in the transmission ratio distortion phenotype expressed by males heterozygous for a T haplotype.	Male germ line
0.011	1.45	0.81	0.00	0.00	1.72	0.25	ET61364	Meprin beta subunit (Mep-1beta); membrane-bound metalloendopeptidases. alpha and/or beta subunit	isoform Kidney, intestine, not reported in meprins are liver contain
0.008	1.19	0.16	0.22	0.19	1.37	0.47	ET62832	Perforator protein (PERF 15);	a Testis

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.016	1.29	0.33	0.24	0.26	1.17	0.40	ET62968	novel testicular protein; sequence similarities to a family of lipid binding proteins; major component of the rat sperm perinuclear theca.	Olfactory and testicular cells
0.003	0.94	0.45	0.02	0.04	1.21	0.02	ET63528	Odorant receptor 23 (OR23) A-myb; a conserved member of the Myb proto-oncogene family; encodes a sequence-specific DNA binding protein (A-Myb) binds to and transactivates embryonic promoters containing myb-binding sites	Abundant expression in testis (germ cell differentiation); low level expression in ovary, spleen (B lymphocytes) and brain; CNS in endocrine progenitor
0.005	1.44	0.46	0.00	0.00	1.14	0.39	ET63177	Pax-4; a paired-box transcription factor that plays an important role in the development of pancreatic beta/delta cells; role in endocrine cell development	Pancreatic islet endocrine progenitor
0.001	1.06	0.22	0.04	0.07	1.37	0.33	M20567	Heat-shock-like protein (HSP70.2); not induced by heat shock; developmentally regulated in spermatogenic cells; critical role in spermatogenesis	70-2 Male germ cells
0.001	1.30	0.05	0.00	0.00	1.10	0.38	ET61399	G protein alpha olfactory subunit; sensory transduction	Olfactory epithelium
0.015	1.07	0.08	0.09	0.15	1.16	0.57	L28819	Involucrin; a glycine-serine-cysteine-rich protein expressed late in differentiation of granular layers in normal epidermis	and Epidermis
0.005	1.45	0.52	0.05	0.09	1.17	0.26	ET62336	DNA ligase III-beta; DNA ligase exists as two distinct isoforms denoted alpha and beta	Alpha is expressed in most tissues; beta is expressed in testes and during spermatogenesis
0	0.95	0.18	0.07	0.12	1.13	0.11	D49438	25-hydroxyvitamin D3 hydroxylase; metabolism and regulation of vitamin D3	24-Kidney and intestine.
0.011	1.27	0.28	0.00	0.00	1.22	0.59	M26940	Beta-casein gene	Mammary glands

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P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.001	1.03	0.29	0.05	0.05	1.12	0.10	V00740	Epsilon-casein	Mammary glands
0	1.01	0.08	0.02	0.04	1.07	0.07	V00428	Lysozyme; signaling molecule for Macrophages, paneth cells (located mast cells which respond with in duodenal crypts)	
histamine secretion									
0.037	1.24	0.26	0.45	0.42	1.09	0.16	U86405	Amphiphysin II; endocytosis and Macrophages, neurons, germ cells, signal transduction (recycling endocrine tissues)	
0.013	1.02	0.02	0.11	0.19	0.94	0.44	U69136	synaptic vesicle components T1-cadherin, calcium-binding Thymocytes membrane glycoprotein acting as cell adhesion molecule (CAMs).	
0.006	1.31	0.40	0.16	0.20	1.32	0.30	X53176	Integrin alpha-4; cell adhesion	Lymphocytes
<0.001	1.27	0.15	0.03	0.05	1.14	0.24	X91043	Erythrocyte band 7 integral Spleen, lung, testis, not reported in membrane protein; protein 7.2b; liver stomatin	
<0.001	1.06	0.06	0.14	0.12	1.12	0.15	X15592	CTLA-2-beta; homologue to T cells cysteine protease proregion	
0.002	1.11	0.15	0.15	0.26	1.12	0.20	X97227	Cell surface glycoprotein CD53; Thymocytes pan-leukocyte antigen; cell membrane glycoprotein	
<0.001	1.10	0.20	0.03	0.05	1.27	0.19	U43384	Gp91phox (Cybb); phagocyte Phagocyte cytochrome b558; heterodimer comprised of gp91phox and p22phox; a flavocytochrome that mediates the transfer of electrons from NADPH to molecular oxygen in the respiratory burst oxidase	
0.005	1.26	0.03	0.15	0.26	1.16	0.39	M30440	Potassium channel gene (MK2); T cells; myelinating Schwann cells shaker subfamily	
0.002	0.99	0.29	0.00	0.00	1.35	0.35	X52991	Homologue of the rat T cell Cytotoxic T lymphocytes differentiation marker RT6; cell-cell signaling	
0.000	1.37	0.11	0.00	0.00	0.97	0.11	X14092	MCSP.1 CTL serine protease 1; T lymphocytes may play a role in cytolytic lymphocyte activation	
0.033	1.36	0.33	0.29	0.50	1.07	0.30	U04269	Interleukin-1 beta converting Monocytes and macrophages	

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P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.015	1.47	0.47	0.24	0.41	1.07	0.06	L16928	enzyme (ICE); may mediate endotoxin-induced cholestatic effect of decreased hepatocellular bile salt uptake; IL-1DOWN in CR	B cells
0.027	1.20	0.13	0.24	0.34	0.94	0.44	ET62844	Differentiation antigen (CD22); B cells mediates B cell interactions with endothelial cells	receptor B lymphocytes, myeloid lineage cells
0.046	1.31	0.39	0.31	0.50	0.98	0.18	U49866	Immunoglobulin-like receptor PIRAG (12M1); appears to activate immunoglobulin-related receptor	
0.003	1.07	0.07	0.38	0.21	1.05	0.17	X04123	Class I recognizing receptors involved in ability of F1 hybrid mice to reject parental H-2d bone marrow cell grafts	Subpopulation of natural killer cell
0.007	1.53	0.51	0.00	0.00	1.51	0.54	U25691	Terminal deoxynucleotidyltransferase; template-independent DNA polymerase; VDJ assembly; recombination	Earliest stage B and T cells
0.005	1.07	0.45	0.00	0.00	1.93	0.62	M23501	Lymphocyte specific helicase; T and B cells at both the immature putative role in replication, repair, and mature stage; not in heart, liver, recombination and transcription lung, muscle, brain or kidney	
0.007	1.08	0.13	0.20	0.34	1.11	0.23	ET61471	P500/TCA3; SIS-epsilon; small, T cells, myeloid and lymphoid cells secreted, and inducible protein; expressed more abundantly in activated mouse helper T cells than by resting T cells	
0.001	1.10	0.31	0.00	0.00	1.41	0.33	M55617	Mast cell protease 7 (mMCP-7); Mast cells mouse mast cell tryptase 2; released when mast cells are activated	
0.038	1.06	0.10	0.30	0.53	1.15	0.21	X51468	Mast cell protease-4	Peritoneal and most connective tissue
								CHEMOKINE/RECEPTOR	
								PREPROMATOSTATIN	
								peptide cleaved to release	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.044	1.53	0.46	0.17	0.30	1.03	0.69	M16762	somatostatin which regulates T cell IFN-gamma production	Helper T cells
0.014	1.06	0.06	0.54	0.18	1.30	0.34	X54542	Interleukin 2 (IL-2); stimulates proliferation of activated T lymphocytes	Some helper T cells and
0.004	1.00	0.08	0.22	0.38	1.40	0.24	X07962	Interleukin-6; promotes B cell maturation to Ig-secreting cells	Some helper T cells and
0.000	1.52	0.10	0.00	0.00	0.97	0.19	U28404	Interleukin 7 (IL-7); growth factor for T cell progenitors	Helper T cells
0.001	1.38	0.28	0.12	0.21	1.00	0.17	X53798	Macrophage inflammatory protein-1 alpha receptor; mediates growth inhibitory effects of the chemokine	Macrophages
<0.001	0.99	0.11	0.07	0.13	1.25	0.22	ET62976	Macrophage inflammatory protein-2 (MIP2); small inducible cytokine subfamily member	Macrophages
0.015	1.31	0.23	0.44	0.35	1.04	0.13	V00755	Macrophage inflammatory protein receptor 1-alpha 2; induces lesser extent in the lung and brain mobilization of intercellular calcium; beta-chemokine; leucocyte chemoattractant	Thymus, heart, spleen, and liver; to
<0.001	1.21	0.19	0.11	0.19	1.10	0.11	V00756	Interferon beta (type 1); growth factor; T helper cell differentiation factor; antiviral; modulates immune responses to foreign and self-antigens	Ubiquitous
0.015	1.31	0.52	0.00	0.00	1.19	0.50	M26271	Interferon beta (type 2)	T cells
0.016	1.47	0.65	0.14	0.21	1.08	0.10	M35684	Interleukin 2 receptor; cytokine receptor	cytokine T cells
0.010	1.22	0.69	0.05	0.09	2.15	0.64	L41495	Complement receptor type 2 Late pre-B cells (CR2)	Late pre-B cells
								Protein-serine/threonine kinase (pim-2); cell proliferation; highly expressed in mitogenically stimulated hematopoietic cells; evokes long-term potentiation in hippocampus	Blood, epithelial and CNS embryonic

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.002	2.00	0.36	0.00	0.00	1.17	0.55	ET61263	Cytosolic tyrosine protein kinase SYK; signal transduction	Lymphopoiesis; platelets, neutrophils
<0.001	1.07	0.11	0.02	0.03	1.11	0.10	X58995	Calmodulin-dependent kinase IV; multifunctional, serine-threonine protein kinase	protein T cells
0.002	1.22	0.42	0.00	0.00	1.14	0.13	D30743	Wee1 kinase; inhibits entry into mitosis by phosphorylation of the Cdc2 kinase	Lymphocytes
0.044	1.12	0.26	0.61	0.27	1.32	0.28	U36757	Thrombin receptor (PAR-1); transmembrane G-protein coupled receptor; activated by serine protease cleavage; thrombin is a activator of the blood coagulation cascade following vessel injury; thrombin acts as a mitogen and apoptosis inducer.	Blood, platelets, monocytes; endothelial cells; cardiomyocytes; neuronal and glial cells
<0.001	1.15	0.13	0.00	0.00	1.05	0.17	U36575	T cell transcription factor NFAT1 isoform B	T cells
<0.001	1.02	0.16	0.00	0.00	1.13	0.15	Z11664	Son of sevenless 2; Ras-specific exchange factors	T cells
0.002	1.18	0.17	0.16	0.27	1.22	0.25	Z11574	Son of sevenless 1; Ras-specific exchange factors	T cells
0.026	0.82	0.47	0.19	0.34	1.43	0.39	M36654	Homeobox gene 2.6 (Hox-2.6) transcription factor; embryonic development; haematopoiesis and spermatogenesis	Whole embryo; in adult: blood cells, embryonic stem cells and low levels in somatic cells
0.034	1.30	0.84	0.00	0.00	1.22	0.24	U10092	Ly-49F-GE antigen; surface molecule; determinant of IL-2-activated NK cell specificity; inhibitory receptor for interaction with MHC class I	NK cell NK cells
0.003	1.15	0.23	0.27	0.12	1.17	0.24	L43567	Antigen, B cell receptor	Blood
0.007	1.08	0.13	0.20	0.34	1.11	0.23	ET61471	Mast cell protease 7 (mMCP-7); mast cell tryptase 2; released when mast cells are activated	Mast cells
0	1.14	0.05	0.00	0.00	0.96	0.26	ET61424	Protein-tyrosine phosphatase	Hematopoietic tissues

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P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.001	1.03	0.03	0.21	0.14	1.04	0.25	ET62444	Sox4; transcription factor in the Thymus, bone marrow, and gonads Sox gene family with separable DNA-binding and transactivation domains	

PRIMARY RESPONSE GENES - LIVER

0.002	0.91	0.20	0.22	0.20	1.15	0.14	L24118	TNF-inducible; primary response gene B94	Liver (during development) and monocytes (postnatally)
0.002	1.19	0.32	0.00	0.00	1.27	0.33	X83601	PTX3, entraxins; include reactive protein (CRP) and serum amyloid P component (SAP) which are prototypic acute phase reactants that serve as indicators of inflammatory reactions.	C Liver, skeletal muscle and heart
0.002	1.09	0.31	0.00	0.00	1.39	0.39	M31419	Interferon-activatable gene (204); Nucleoimediates immunomodulatory and cell growth-regulatory activities of interferons; increased up to 75-fold by alpha-interferon treatment	

PRIMARY RESPONSE GENES - OTHER TISSUES

<0.001	1.11	0.17	0.09	0.15	1.00	0.17	D13695	ST2L, primary response gene; T cell stimulation; highly similar to IL1 receptor type 1	T cells
0.005	1.28	0.46	0.00	0.00	1.40	0.39	U34245	Fos-related antigen-1 (Fra-1)	Spleen
<0.001	1.04	0.04	0.00	0.00	1.14	0.21	Y08026	Immunity associated protein 38; Spleen inducible by malaria	Spleen
0.001	1.35	0.36	0.00	0.01	1.23	0.20	M81077	TAL2	T cells
<0.001	1.03	0.14	0.00	0.00	1.10	0.09	U19463	Zinc finger protein A20; activated lymphocytes by T cell acute lymphoblastic leukemia; helix-loop-helix DNA binding protein	
0.1	1.27	0.24	0.00	0.00	1.40	1.23	L15435	4-1BB ligand, inflammatory T cells response; member of the TNF	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
<0.001	1.18	0.18	0.00	0.00	1.03	0.16	M88242	Glucocorticoid-regulated inflammatory cyclooxygenase; prostaglandin G/H synthase, putative mediator of inflammation; mRNA and protein rise dramatically in response to growth factors, cytokines, and oncogene activation; suppressed by glucocorticoid hormone	Fibroblasts and human monocytes
<0.001	1.07	0.12	0.00	0.00	1.16	0.09	L38281	Immune-responsive gene 1 (irg1); Macrophages activated by bacterial LPS treatment	
0.001	1.15	0.32	0.02	0.03	1.31	0.28	K02785	Gene induced by PDGF with Unknown some homology to c-fos	
0.002	0.95	0.10	0.43	0.27	1.37	0.11	X92664	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0	1.11	0.11	0.00	0.00	1.02	0.10	X71978	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0.028	1.33	0.95	0.00	0.00	1.79	0.49	L04141	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0.000	1.74	0.30	0.00	0.00	1.08	0.24	J03482	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0.000	1.69	0.18	0.02	0.03	1.09	0.27	ET62262	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0.030	1.41	0.26	0.34	0.53	1.10	0.24	ET62908	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0.038	1.20	0.27	0.00	0.00	0.79	0.70	U62675	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	
0.006	1.08	0.12	0.15	0.18	1.12	0.40	U62672	Ubiquitin-conjugating enzyme Liver, skeletal muscle (ubiquitous)	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.024	1.22	0.82	0.00	0.00	1.36	0.11	X16495	Histone H2A; structure	chromatin Ubiquitous
<0.001	1.07	0.13	0.00	0.00	1.19	0.13	U62669	Histone H3.2-F (H3-F), histone H2b-F (H2b-F); chromatin structure	Ubiquitous
0.034	1.11	0.15	0.30	0.52	1.16	0.21	X56044	Ht9-c; structural similarity with Liver (ubiquitous) yeast and bacterial nucleic acid-modifying enzymes; activated at the G1/S transition, maximum and S phase; down in growth arrested cells	
0.009	1.06	0.11	0.28	0.48	1.44	0.21	X56690	Homologous to Drosophila HP1 Ubiquitous during development gene; modifies chromatin, rendering heritable changes in gene expression; activates or silences genes	
0.025	1.51	0.35	0.27	0.47	0.99	0.36	X92842	SURF-6; involved in a nucleolar Nucleolus (ubiquitous) ribosome maturation; housekeeping	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.022	1.11	0.17	0.00	0.00	0.82	0.60	X66285	HC1 gene; mouse gene homologous to the E5 ORF from bovine papillomavirus type 1; transforms immortalized rodent cells.	
0.000	1.09	0.27	0.00	0.00	1.54	0.14	ET62229	Wnt10b; developmental limb, face and skin of regulation of cell growth and embryos and in adult differentiation in certain adult mammalian tissues	
0.003	1.66	0.58	0.00	0.00	1.11	0.22	ET61747	Citron; Rho (controls actin Ubiquitous structures) target protein; role in cytokinesis	
0.001	1.93	0.38	0.00	0.01	1.12	0.45	Y00848	Int-2 (FGF-3); expressed in Early embryogenesis; discrete embryonic development regions during development; not reported in adult	
0.002	1.46	0.17	0.47	0.20	1.08	0.17	X61940	Mitogen-activated protein kinase (MKP-smooth muscle, others phosphatase 1/3CH134/ERP1); serum growth factor-induced immediate early	

P	CR	std	CON	std	SW	std	GenBank	Description	MAP	Location
								gene; dephosphorylates		
<0.001	1.08	0.07	0.00	0.00	1.05	0.20	Z72000	kinase BTG3; negative control of cell Fibroblast, brain cycle		
<0.001	1.13	0.11	0.03	0.05	1.04	0.16	X07540	C-abl; a nonreceptor tyrosine kinase; appears to play a role in cell cycle progression, cell proliferation and differentiation		Liver, B cells
0.006	1.02	0.02	0.00	0.00	0.92	0.45	U10440	G1 cyclin-Cdk protein kinase Ubiquitous inhibitor p27, cell cycle; cyclin-dependent kinase inhibitor p27 (Kip1)		
0	1.08	0.17	0.00	0.00	1.29	0.21	ET61628	Phosphoinositide regulatory subunit p85alpha; plays critical roles in cell growth, differentiation, survival, and vesicular transport		3-kinase Liver
0.002	1.48	0.47	0.00	0.00	1.26	0.23	ET61257	Map Kinase Kinase Kinase (MEKK Ubiquitous 1) ; MEK kinases (MEKKs) are serine-threonine kinases that regulate sequential protein phosphorylation involving mitogen-activated protein kinases (MAPKs), including members of the Jun kinase (JNK) family.		
0.002	1.10	0.41	0.00	0.00	1.25	0.22	U85608 (was U11548)	Mitogen-activated protein kinase Liver (15 times higher in fetal than adult); ubiquitously important in cell proliferation, differentiation, and apoptosis; induced by epidermal growth factor; activation of MAPK induces c-Fos and c-Jun; CR reduces the age related decline in MAPK activation		
0.002	1.09	0.31	0.00	0.00	1.39	0.39	M31419	Interferon-activatable gene (204); Nucleolar antimicrobial, mediates		

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.029	1.36	0.37	0.48	0.34	1.27	0.24	D13544	immunomodulatory and cell growth-regulatory activities of interferons; increased up to 75-fold by alpha-interferon treatment	cell

DNA REPLICATION/REPAIR

0.025	1.24	0.37	0.45	0.16	1.14	0.25	X74351	Primase small (p49) subunit; cell Liver (ubiquitous) proliferation; DNA replication XPAC (Xeroderma Pigmentosum Ubiquitous group A Correcting protein); nucleotide excision DNA repair	Ubiquitous
0.001	1.03	0.29	0.00	0.00	1.27	0.30	ET62746	Brca2 gene; familial breast cancer susceptibility gene; important in DNA double-strand break repair (DSBR) and DNA damage-induced cell-cycle checkpoint activation	Ubiquitous
<0.001	1.17	0.13	0.13	0.14	1.07	0.19	X58472	KIN17, DNA-binding, nuclear Ubiquitous protein, upregulated in response to UV and ionizing radiation; accumulated in the nucleus of proliferating fibroblasts; overexpression inhibits progression into S phase	Ubiquitous
0.009	1.02	0.03	0.17	0.14	0.85	0.37	ET63479	MLH1; DNA mismatch repair Ubiquitous gene; function in mutation avoidance; cell cycle checkpoint control; cytotoxicity of various DNA-damaging agents; transcription-coupled nucleotide excision repair	Ubiquitous

0.005	1.07	0.19	0.33	0.30	1.36	0.23	Z37110	Cyclin G; augments apoptosis; Liver target gene of p53	Liver
0.000	1.00	0.09	0.42	0.05	1.12	0.04	ET63241	Apoptain precursor caspase-3; YAMA protein; lymphocytes cysteine protease; mediator of	Liver, neurons, lung, kidney, spleen.

P	CR	std	CON	std	SW	std	GenBank	Description	Location
<0.001	1.14	0.13	0.05	0.09	1.06	0.11	X58876	apoptosis; processes precursor IL-1; PARP-cleaning Mdm2 is a P53 specific ubiquitin ligase; promotes the ubiquitination and proteasome- dependent degradation of p53; immediately after cellular stress, MDM2 ability to bind to p53 is blocked, preventing MDM2- mediated degradation, P53 levels rise causing cell cycle arrest or apoptosis	Liver
<0.001	1.12	0.15	0.00	0.00	1.08	0.24	L22472	Bax alpha; Bcl-2-family protein with pro-apoptotic activity; can form channels in lipid membranes Bcl-2-beta; suppresses programmed cell death	Liver
0.001	1.21	0.28	0.00	0.00	1.16	0.22	L31532	Zn-finger protein Pw1/Peg3; Ubiquitous activates NFkappaB; regulator of TNF response; induced during p53/c-myc-mediated apoptosis;	Liver
0.050	1.25	0.15	0.47	0.50	1.01	0.07	U48804	Pw1/Peg3 with Siah1a induces apoptosis independently of p53; inhibiting Pw1/Peg3 activity blocks p53-induced apoptosis.	Liver
0	0.91	0.19	0.00	0.00	1.08	0.06	ET61211	RNA-dependent EIF-2 alpha Ubiquitous kinase; double-stranded (ds) RNA-dependent protein kinase (PKR); key mediator of antiviral effects of interferon (IFN); active player in apoptosis.	Liver
0	1.11	0.11	0.00	0.00	1.02	0.10	X71978	Ft1, a novel gene related to ubiquitin-conjugating enzymes; deletion leads to partial syndactyly of the limbs and thymic hyperplasia, suggesting impaired programmed cell death	Liver
0.000	1.28	0.19	0.11	0.19	0.95	0.09	V00743	Alpha-fetoprotein (AFP); main component of mammalian fetal	Liver

P	CR	std	CON	std	SW	std	GenBank	Description	Location
<0.001	1.10	0.09	0.07	0.12	1.07	0.16	M16395	serum; synthesized by visceral endoderm of the yolk sac and by fetal liver; blood level decreases after birth; synthesis reactivated in liver tumors	main Liver (fetal & adult)
								Alpha-fetoprotein (AFP); component of mammalian fetal serum; synthesized by visceral endoderm of the yolk sac and by fetal liver; blood level decreases after birth; synthesis reactivated in liver tumors	
0.018	1.14	0.13	0.38	0.42	1.30	0.26	X03479	Serum amyloid A (Saa) 3; serum liver protein; major acute phase protein	Serum Liver
0.049	1.15	0.64	0.57	0.18	1.71	0.35	ET63455	Serum amyloid A-4 protein (Saa4); a minor, normal high-density lipoprotein (HDL, apolipoprotein); induced by apolipoprotein; acute-phase trauma and inflammation; normally rapidly catabolized; degraded by secreted or cell-associated neutral proteases generated by macrophages	Epithelial cells in a variety of tissues
0.008	1.57	0.50	0.14	0.25	1.00	0.25	V00829	Kallikrein; serine protease; Liver generates proinflammatory kinins; processes peptides	Liver
0.002	1.27	0.40	0.00	0.00	1.35	0.31	X61597	Kallikrein-binding protein; kalikrein regulation; serine proteinase inhibitor superfamily	tissue Liver, lung, thymus
EXTRACELLULAR MATRIX ADHESION									
0.002	1.60	0.32	0.03	0.05	1.17	0.41	Z50147	Cell adhesion regulator; Liver extracellular matrix protein	Liver
0.000	1.34	0.27	0.05	0.08	0.95	0.11	X06115	E-cadherin; cell-cell adhesion; surface glycoprotein; transmembrane protein	cell Liver (epithelial cells)

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P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.001	0.94	0.16	0.42	0.06	1.26	0.14	ET62381	K-cadherin/cadherin-6; present at Cerebral cortex in neonatal mice; external cell surface at cell-cell newly formed epithelium of the renal contact sites; calcium-dependent vesicle; proximal renal tubules; cell adhesion molecules	
0.006	1.05	0.09	0.35	0.31	1.06	0.05	U69137	T2-cadherin; calcium-binding Thymocytes; developing testis and membrane glycoprotein; cell retina	
0.003	1.08	0.13	0.09	0.15	0.99	0.34	X77557	adhesion molecule cadherin 11(cad11); calcium- Mesoderm surrounding organs; dependent mesenchymal cell Developing somites;	
0.004	1.56	0.22	0.25	0.29	1.17	0.34	X67783	adhesion molecule Vascular cell adhesion molecule-1 Liver (VCAM-1); immunoglobulin gene	
<0.001	1.29	0.29	0.01	0.03	1.22	0.19	X66976	superfamily; transmembrane Collagen alpha 1 type VIII; Epithelial, endothelial, and extracellular matrix; component mesenchymal cells in newborn of basal laminae	
0.004	1.37	0.47	0.00	0.00	1.32	0.34	Z35166	Collagen IV alpha 3 chain; Liver extracellular matrix; component of basal laminae	
0.012	1.08	0.18	0.30	0.42	1.51	0.36	Z35168	Collagen IV alpha 5 chain; Liver collagen; extracellular matrix	
0.006	1.11	0.45	0.00	0.00	1.42	0.39	L02918	Procollagen type V alpha 2	Liver
0.001	0.97	0.11	0.14	0.25	1.48	0.29	X66402	Stromelysin 1; matrix-degrading metalloproteinase	extracellular Liver, stromal cells
0.009	1.30	0.57	0.00	0.00	1.46	0.43	U08210	Tropoelastin; elastic fibers in Vessel vessel walls and other tissues consist of cross-linked tropoelastin in association with several microfibrillar protein	
<0.001	1.12	0.16	0.00	0.00	1.15	0.13	X16490	Plasminogen activator inhibitor 2; Liver; mainly expressed in the skin, serine protease inhibitor; bone-marrow, spleen, lung, thymus, inactivates urokinase-type and urinary bladder plasminogen activator and regulates degradation of the extracellular matrix; one form is cytoplasmic the other is	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.010	1.21	0.41	0.32	0.29	2.11	0.63	D13509	translocated into the endoplasmic reticulum, glycosylated and secreted Pancreatitis-associated protein Liver (ductular cells), pancreas, small (PAP); C-type lectin; adhesion intestine protein; binds laminin; may be important in liver cell differentiation/proliferation; adhesion molecule for hepatocytes	
0.014	1.31	0.46	0.13	0.23	1.66	0.59	ET63188	Fibroblast activation protein; cell- Fibroblasts surface glycoprotein; member of the serine protease family; expressed at sites of tissue remodelling.	
0.017	1.61	0.70	0.00	0.00	1.45	0.59	X75636	Iduronato-2-sulfatase (IDS); Ubiquitous degrades heparin sulfate and dermatan sulfate in lysosomes; deficiency causes fatal lysosomal storage disorder, mucopolysaccharidosis type II (the glycosaminoglycans heparin sulfate and dermatan sulfate accumulate); part of proteoglycans which bind, help package and store secretory molecules; function in cell adhesion and basal lamina formation	

TRANSPORT/SECRETION									
0.010	1.15	0.14	0.31	0.37	1.09	0.16	ET63248	RAN binding protein 1 (RANBP1); Ubiquitous RAN-specific GTPase-activating protein; required for nucleocytoplasmic transport of many types of cargo	
0.013	0.99	0.16	0.25	0.41	1.15	0.15	D87900	ARF3; ADP-ribosylation factor; Ubiquitous involved in formation of coated	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.001	1.04	0.07	0.38	0.16	1.12	0.12	U19521	Vesicle transport protein (munc-18c)	Ubiquitous
0.001	1.12	0.15	0.43	0.09	1.06	0.13	X14972	Alpha-adaptin; adaptor complex components; link clathrin to coated vesicle receptors	Liver and brain
<0.001	1.05	0.07	0.00	0.01	1.04	0.17	Z22821	Rab23; Ras-related small GTPase; protein trafficking; regulatory elements of intracellular transport machinery; regulate vesicle docking and fusion, organelle dynamics	Liver regeneration leads to central differential regulation of some Rabs; of the other cells
0.003	1.23	0.28	0.00	0.00	1.28	0.45	D29797	Syntaxin 3A, IER vesicular transport, membrane fusion	Liver
<0.001	1.08	0.09	0.01	0.02	1.13	0.11	X66449	Calcyclin, also called S100A6; calcium binding protein; secretion.	Epithelial cells and fibroblasts of breast, heart, intestine, kidney, ovary, placenta, stomach, thymus, and uterus; high levels of expression in epithelial lining the gastrointestinal, respiratory and urinary tracts

0.001	1.21	0.18	0.00	0.00	1.12	0.29	U96700	Serine proteinase inhibitor (SPI6); not secreted, the endoplasmic reticulum; intracellular function unclear	6 Lymphocytes; endothelial and epithelial cells; platelets
0.013	1.10	0.15	0.00	0.00	1.05	0.58	L39373	N-acetylglucosaminyltransferase III (Mgat3); transfers the bisecting GlcNAc to the core of complex, N-linked carbohydrates	Liver
0.001	0.97	0.15	0.48	0.11	1.08	0.07	U58513	Rho kinase (p160, ROCK-2); is a small GTPase; serine/threonine coiled coil-forming protein kinase; downstream targets include LIM-kinase 1, which phosphorylates cofilin, an actin-depolymerizing factor; regulates actin	Rho Ubiquitously expressed except in the brain and muscle

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.009	2.03	0.56	0.24	0.41	1.11	0.39	U96724	cytoskeletal reorganization; Rho activity enhances secretion; phosphorylation of myosin light chain and moesin may prevent pathologic platelet activation during atherogenesis. Phosphatidylinositol transfer protein alpha (Pitpn); cytosolic protein binds phosphatidylinositol and transfers it between membranes; mutant in this gene (the mouse vibrator mutation) causes an early-onset progressive action tremor, degeneration of brain stem and spinal cord neurons, and juvenile death.	Ubiquitous
0.001	1.27	0.13	0.07	0.12	0.94	0.31	X78304	Signal recognition particle (SRP9); cytoplasmic ribonucleoprotein; synthesis and translocation of secreted proteins	Ubiquitous
0.001	1.01	0.08	0.15	0.25	1.22	0.18	ET62525	Polypeptide acetylglucosaminyltransferase-T4 (polypeptide transferase-T4; ppGalTase-T4); small fourth member of the mammalian UDP-GalNAc; localization; 4 transferase controls the initiation of mucin-type O-linked protein glycosylation, in which N-acetylglucosamine is transferred to serine and threonine amino acid residues	N- Wide expression pattern; detected in embryonic tissues, as well as adult embryonic sublingual gland, stomach, colon, small intestine, lung, cervix, and lower levels detected in liver, heart, brain, spleen, and ovary
0.017	1.07	0.06	0.25	0.44	0.97	0.11	X14926	Calreticulin; endoplasmic reticulum calcium storage and signaling; nuclear matrix component	
0.017	1.61	0.70	0.00	0.00	1.45	0.59	X75636	Iduronato-2-sulfatase (IDS); Ubiquitous	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.011	1.04	0.05	0.29	0.28	1.12	0.31	U28419	degrades heparin sulfate and dermatan sulfate in lysosomes; deficiency causes fatal lysosomal storage disorder; mucopolysaccharidosis type II (the glycosaminoglycans heparin sulfate and dermatan sulfate accumulate); part of proteoglycans which bind, help package and store secretory molecules; function in cell adhesion and basal lamina formation	

TRANSLATION INITIATION FACTOR eIF-4C Ubiquitous

0.000	1.48	0.24	0.00	0.00	1.05	0.08	X57960	homologue Ribosomal protein incorporated into 60 S subunit	L7; Ubiquitous
0.013	1.17	0.22	0.37	0.29	1.04	0.18	M29016	Ribosomal protein L7 (rpl7); incorporated into 60 S subunit	Ubiquitous
<0.001	1.06	0.05	0.00	0.00	1.18	0.25	K02080	Ribosomal protein L32	Ubiquitous
0.001	1.27	0.13	0.07	0.12	0.94	0.31	X78304	Signal recognition particle (SRP9); cytoplasmic ribonucleoprotein; synthesis and translocation of secreted proteins	Ubiquitous

TRANSCRIPTION FACTOR 1 Mesenchyme fork head-1 (MFH- H + J509 hepatocytes

0.026	1.20	0.18	0.34	0.35	1.36	0.48	X74040	1) transcription factor	Many cell-types during development; muscle in adult
0.016	1.32	0.28	0.31	0.26	1.08	0.37	ET61028	ARE Binding Protein (AREC3)	Developing embryos
0.005	1.16	0.04	0.00	0.00	0.77	0.46	ET62446	Sox12; transcription factor; family plays important role in development	
0.018	1.19	0.27	0.39	0.32	1.14	0.18	X55781	Pax2 transcription factor; paired box family (homologous to CNS Drosophila segmentation genes)	embryo excretory and
0.032	1.16	0.18	0.50	0.35	1.26	0.09	ET62078	Putative transcription factor	Many locations in embryo during

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.003	1.06	0.13	0.48	0.25	1.31	0.11	X75018	(tbx4); T-box DNA binding development domain; putative roll in inductive interactions during embryogenesis	up-regulated
								Id4; CD44; dominant negative Embryogenesis, regulators of bHLH transcription between day 9.5 and 13.5 of factors; differentiation in cellular gestation; adult highest expression systems including myogenesis, testis, brain and kidney; also in liver; neurogenesis and adipocytes, astrocytes, muscle cells haematopoiesis; adipocyte and others	
0.009	1.56	0.64	0.00	0.00	1.47	0.44	L28167	Zinc finger protein, the Kruppel-Liver, lens, heart, kidney, spleen, associated box (KRAB); similar brain of newborn mice to profilaggrin (expressed in differentiating epidermal cells)	
0.003	1.17	0.37	0.10	0.16	1.21	0.18	U13878	Neural-restrictive silencer factor Many nonneuronal cells and tissues (NRSF/REST); transcription factor; represses expression of neuronal genes including mAChR, SCG-10 and type II sodium channel genes; recruits mSin3 and histone deacetylase	
<0.001	1.09	0.12	0.11	0.13	1.09	0.09	X89264	Zinc-finger protein Zip-37; Liver transcription factor (putative); peroxisome proliferator responsive; contains Kruppel-associated box	
0.018	1.18	0.62	0.08	0.07	1.06	0.08	U15443	C-ros (c-ros); embryonic Neoplastic and fetal tissues development; tyrosine kinase catalytic domains; expressed in neoplastic and fetal tissues	
0.003	1.24	0.40	0.00	0.00	1.25	0.32	X59251	Hox-7; transcription factor; early Embryogenesis stage of eye developmental regulation in embryo	
0.001	1.12	0.27	0.10	0.18	1.17	0.12	M28449	Hox-1.7; homeobox; transcription Embryogenesis factor	
0.01	1.53	0.65	0.00	0.00	1.50	0.46	X56182	Myf-5; myogen factor 5; Embryonic liver and heart	

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P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.047	1.45	0.81	0.00	0.00	1.42	0.72	X13538	transcription factor; helix-loop-helix family	Embryonic spinal cord and adult testis
0.001	1.23	0.23	0.03	0.05	1.11	0.26	X60034	Hox-1.4; transcription factor	Embryonic spinal cord and adult testis
0.002	1.27	0.23	0.00	0.00	1.14	0.38	X80339	Hox-4.9; homeobox; transcription factor	Embryonic spinal cord and adult testis
0.024	1.56	0.52	0.00	0.00	1.49	0.83	D00925	Six1; homeobox; development of skeletal and smooth muscle limb tendons	Embryonic spinal cord and adult testis
0.003	1.17	0.15	0.13	0.22	0.88	0.27	X67719	Transcription factor S-II-related Liver protein; transcription elongation factor	Embryonic spinal cord and adult testis
0.009	1.50	0.67	0.00	0.00	1.34	0.29	X60136	CREBcAMP-responsive-element binding protein	Ubiquitous
<0.001	1.16	0.03	0.09	0.15	1.02	0.07	X80508	Sp1; transcription factor; zinc Ubiquitous finger protein	Ubiquitous
<0.001	1.07	0.06	0.00	0.00	0.95	0.13	X76858	Yes-associated protein (YAP65); Ubiquitous transcription activator	Ubiquitous
								Phi AP3, nuclear factor; DNA Ubiquitous binding transcription factor; inactivates adjacent enhancer function; Gli-Kruppel related; cell-cycle regulated	Ubiquitous
0.002	1.99	0.65	0.00	0.00	1.08	0.19	Y12783	Ring1B; interacts directly with the repressor domain of M33; M33 is a transcription factor implicated in mesoderm patterning in the mouse; in Drosophila, homologue genes maintain repression of developmental genes including homeotic genes	Ubiquitous
0.003	1.08	0.17	0.17	0.29	1.41	0.32	X55315	CAAT-box DNA binding protein Ubiquitous subunit A (NF-YA)	Ubiquitous
0	1.36	0.25	0.00	0.00	1.02	0.04	X15842	C-rel; encodes a member of the Ubiquitous Rel/nuclear factor (NF)-kappaB family of transcription factors	Ubiquitous

RNA SPLICING / PROCESSING

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.011	1.06	0.08	0.38	0.33	1.04	0.10	ET63161	Alternative splicing factor (ASF); recruits basal splicing factors during spliceosome assembly	Ubiquitous (?)
0.001	1.04	0.12	0.15	0.26	1.07	0.07	Y08260	CPEB protein; RNA binding protein that interacts with the maturation-type cytoplasmic polyadenylation element to promote polyadenylation and translational activation	Ubiquitous
0.004	1.14	0.19	0.00	0.00	1.02	0.44	X91656	Srp20 gene; splicing factor belonging to the highly conserved family of SR proteins; multiple roles in the regulation of constitutive and alternative splicing	Ubiquitous

MEMBRANE PROTEIN CLASS I (AGP) LIVER

0.003	1.08	0.17	0.00	0.00	1.47	0.51	M17376	Alpha-1-acid glycoprotein I (AGP. Liver 1); membrane protein	Unknown
0.001	1.48	0.19	0.00	0.00	0.97	0.37	M75875	MHC class I T3-d gene; H-2-d Unknown haplotype; beta-2-microglobulin associated protein; cell surface glycoprotein; class I antigen	Ubiquitous
0.036	1.09	0.10	0.44	0.38	1.09	0.23	J03298	Major histocompatibility complex Ubiquitous DO beta gene	Ubiquitous
0.001	1.76	0.14	0.01	0.01	1.02	0.47	D90146	MHC gene Q8/9d Qa-2,3 class I Ubiquitous antigen	Ubiquitous
0.001	1.12	0.29	0.00	0.00	1.16	0.18	U06662	59-kd oncofetal antigen; Fetal antigen; not reported in adult antigens present on the surface tissues of all major classes of rodent tumors	Ubiquitous
0.008	1.07	0.73	0.00	0.00	1.73	0.16	X61576	Connexin 43; gap junction Liver, heart, bone, skin, etc.; Mol proteins; contain ion exchange Carcinog 1996 Aug; 16(4):203-12 channels that generate signals throughout the tissue	Ubiquitous
0.024	1.41	0.69	0.00	0.00	1.45	0.61	M91243	Connexin family of gap junction Ubiquitous (cell-to-cell channels) proteins (Cx50); likely IS lens fiber protein	Ubiquitous

P	CR	std	CON	std	SW	std	GenBank	Description	Location
								MP70	
0.023	1.38	0.74	0.00	0.00	1.30	0.40	X54424	Gamma adaptin; major Liver (ER) component of adaptor; the protein complex links clathrin to transmembrane proteins in coated pits and vesicles	
0.005	1.43	0.52	0.00	0.00	1.37	0.38	U49185	Occludin; occludin is a Liver transmembrane protein located at tight junctions and is known to interact with other tight junction proteins	
0.027	1.28	0.32	0.60	0.13	1.43	0.37	M81591	CD10 neutral endopeptidase Ubiquitous 24.11 (CD10/NEP); cell surface metalloproteinase; activation marker for mononuclear cells; peptide mediated signal transduction; inactivates numerous endogenous peptides in the brain, kidney, and lung in vivo	
0.009	1.06	0.75	0.00	0.00	1.93	0.43	Z22216	Apolipoprotein C2 (APOC2); Fetal liver, adult liver, intestine and required for lipolysis of peritoneal macrophages triglycerides by lipoprotein lipase	
0.026	1.09	0.03	0.50	0.19	0.93	0.27	V00834	MHC class II H2-E-alpha	B cells, IgE
0.003	1.16	0.07	0.48	0.13	0.90	0.21	X68061	Beta-2-microglobulin; membrane protein; 45,000 MW HLA antigen	Liver (hepatocytes)
0.002	0.99	0.29	0.00	0.00	1.38	0.36	M23383	Glucose transporter 2	
0.038	1.24	0.60	0.22	0.28	1.08	0.12	ET63259	Cea14 gene (carcinoembryonic antigen family members); liver	Many cea genes expressed in fetal
0	1.08	0.15	0.18	0.17	1.32	0.16	ET63260	the immunoglobulin superfamily Cea15 gen (carcinoembryonic antigen family members); liver	Many cea genes expressed in fetal
0.001	1.04	0.04	0.22	0.12	1.16	0.28	ET63261	the immunoglobulin superfamily Cea16 gene (carcinoembryonic antigen family members); liver	Many cea genes expressed in fetal

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P	CR	std	CON	std	SW	std	GenBank	Description	Location
ENERGY-GENERATION									
0.003	0.97	0.06	0.18	0.26	1.34	0.33	U00932	unknown function; member of the immunoglobulin superfamily	Liver
								Glutamine: fructose-6-phosphate	Liver
								amidotransferase (GFAT); rate-limiting enzyme in hexosamine synthesis	
0.016	1.10	0.16	0.33	0.41	1.24	0.21	D21826	CMP-N-acetylneuraminic hydroxylase; expression	acid Liver
								Prostaglandin synthase	Liver
0.001	1.08	0.31	0.00	0.00	1.58	0.32	X98792	cyclooxygenase Down in CR	Liver
0.002	1.23	0.28	0.01	0.02	1.42	0.41	M29395	Orotidine-5'-monophosphate decarboxylase; conversion of orotidine 5'-monophosphate to UMP; UMP biosynthetic pathway.	
<0.001	1.01	0.03	0.01	0.01	1.11	0.10	X72959	Nat3 gene for N-acetyltransferase	Liver
0.001	1.10	0.13	0.06	0.10	1.20	0.30	J04947	ACE; angiotensin-converting enzyme	Liver
<0.001	1.16	0.02	0.04	0.08	1.02	0.13	L09105	Glucose phosphate isomerase	Ubiquitous
0.039	1.39	0.70	0.00	0.00	1.56	0.80	X14489	Thymidylate synthase (TS)	Ubiquitous (all proliferating cells)
0.005	1.37	0.42	0.00	0.00	1.54	0.51	U34071	Alpha-galactosidase A; lysosomal enzyme	Ubiquitous (most cases)
0.004	1.08	0.20	0.51	0.17	1.11	0.03	J00355	Alpha-amylase-1 (Amy-1A); glycogen digestion and mobilization	Liver and salivary glands
0	1.10	0.09	0.29	0.05	1.20	0.19	X07888	3-hydroxy-3-methylglutaryl coenzyme A reductase; key regulatory enzyme for cholesterol biosynthesis.	Liver
ION CHANNELS/PUMP									
0.000	1.42	0.20	0.00	0.00	0.95	0.14	ET61677	Epithelial sodium channel subunit	alpha Liver
0.044	1.33	0.44	0.35	0.34	1.07	0.33	U03723	AKR voltage-gated potassium channel (KCN4)	Ubiquitous
0.039	1.24	0.23	0.45	0.34	1.09	0.31	M30441	Potassium channel gene (MK3)	Ubiquitous
0	1.27	0.06	0.13	0.13	1.07	0.13	ET61590	Putative capacitative calcium regulatory enzyme for cholesterol biosynthesis.	Brain, kidney, heart and lung. no trip

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.002	1.19	0.35	0.06	0.10	1.43	0.34	ET61440	entry channel (Trp6); involved in message detected in liver calcium entry secondary to activation of receptors coupled by the Gq class of G protein.	
								Trp-related protein 3; cation Endothelium channel; essential for agonist-activated capacitative Ca2+ entry; putative subunits of CCE channels	
NUCLEAR RECEPTORS									
0.016	1.38	0.67	0.07	0.13	1.28	0.26	X07751	Thyroid hormone receptors	Liver
0.003	1.24	0.31	0.13	0.16	1.23	0.26	X04435	Glucocorticoid receptor	Liver
<0.001	1.20	0.23	0.03	0.05	1.11	0.15	X74134	COUP-TF1; steroid hormone receptor; transcription factor	Liver
0.01	1.13	0.12	0.00	0.00	1.21	0.61	X76653	Apolipoprotein regulatory protein1 (ARP-1); member of the COUP-family of steroid hormone orphan receptors	Liver, lung, kidney
0.049	0.90	0.55	0.35	0.04	1.40	0.43	X59411	Androgen receptor	Sex glands, liver, heart, kidney, bone
CYTOKINE/GROWTH FACTORS									
0.003	1.10	0.23	0.11	0.18	1.61	0.45	X57413	Transforming growth factor-beta2 (TGFbeta2); proliferation	Liver stellate cells
0.012	1.11	0.23	0.35	0.32	1.05	0.06	ET62118	Keratinocyte factor/fibroblast growth factor-7 precursor (mKGF)	growth Liver epithelial cells
0.001	1.38	0.08	0.00	0.00	0.94	0.40	Z29532	Follistatin; binds and inactivates activin; up-regulated by mediators of inflammation; control of the inflammatory cascade	Liver
0.000	1.41	0.13	0.11	0.17	0.94	0.25	M28587	Alpha leukocyte interferon (MuIFN-alpha A); inhibition of proliferation	Ubiquitous
0.015	1.31	0.23	0.44	0.35	1.04	0.13	V00755	Interferon beta (type 1); growth factor; T helper cell	Ubiquitous

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.002	1.10	0.10	0.48	0.17	1.15	0.16	M30644	differentiation factor; antiviral; modulates immune responses to foreign and self-antigens	factor Endothelial cells (vascular); pituitary; cells;
								Basic fibroblast growth factor (Fgf2); FGF-2); potent effects on neurons, glia and astrocytes; leukocytes; endothelial cells; mitogen, differentiation and survival factors, angiogenic factor; levels are markedly elevated after liver injury; stimulates hepatocyte proliferation and migration at the wound front;	peritoneal mesothelial cells;
<0.001	1.12	0.04	0.09	0.15	1.12	0.21	X53257	NT-3 gene for neurotrophin-3; secreted protein; binds high affinity receptor trk C; development?	Liver parenchymal cells, olfactory bulb, cerebellum, septum, thymus, heart, diaphragm, pancreas, spleen, kidney, adrenal
0.001	1.07	0.07	0.10	0.17	1.13	0.23	J00424	Interferon-beta	Liver
0.001	1.10	0.11	0.02	0.02	1.18	0.38	U96386	Activin beta E subunit, member of TGF-beta superfamily	Liver
0.005	1.24	0.41	0.00	0.00	1.28	0.39	X69620	Inhibin beta-B subunit; are dimeric proteins, members of the transforming growth factor beta (TGF-beta) gene superfamily, consisting of beta-subunits of inhibin (betaA and betaB)	actives Liver
0.003	2.25	0.40	0.18	0.32	1.19	0.55	X99572	C-fos-induced growth factor (FGF); secreted member of the platelet-derived growth factor/vascular endothelial growth factor (PDGF/VEGF) family; mitogenic and morphogenic activity on fibroblasts.	factor Endothelial cells, expressed in many protein tissues (including liver) during embryonic development
0.003	1.11	0.10	0.26	0.26	1.17	0.22	U07982	Preproendothelin-1;	induces Vascular wall endothelial cells.

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.004	1.30	0.21	0.30	0.29	1.09	0.19	X82320	smooth muscle expression; induced in stellate epithelial cells and endothelial cells of liver after trachea; liver (nonparenchymal cells, injury)	alpha-actin arterial smooth muscle cells, select cells; kidney, lung, predominantly in sinusoidal endothelial cells
SIGNAL TRANSDUCTION									
0.041	1.19	0.25	0.41	0.28	1.13	0.40	X13664	Stathmin; phosphoprotein participating in relay and integration of intracellular signaling pathways involved in control of cell proliferation, differentiation, and other activities	cytosolic Ubiquitous
0.002	1.46	0.17	0.47	0.20	1.08	0.17	X61940	N-ras; key component of growth signaling pathways; transmits membrane receptor kinase signals; GTP-binding switch protein	Liver, wide tissue distribution
0.004	1.17	0.48	0.00	0.00	1.09	0.15	S45828	Mitogen-activated protein phosphatase 1/3CH134/ERP1; serum growth factor-induced immediate early gene; dephosphorylates MAP kinase	Liver parenchymal cells, vascular smooth muscle, others
0.001	1.09	0.27	0.10	0.15	1.23	0.22	U65313	Serine/threonine/tyrosine kinase (Nek1); related to the NIMA (a protein kinase which controls initiation of mitosis in Aspergillus nidulans)	protein All organs examined
0.013	1.02	0.03	0.00	0.00	1.02	0.57	M63658	Ras-GTPase-activating domain binding protein (G3BP); essential for Ras signaling	SH3- Ubiquitous
0.003	1.09	0.11	0.03	0.05	1.25	0.45	U38501	G protein beta-subunit	Brain, liver, blood cell
0.010	1.32	0.28	0.24	0.41	1.06	0.11	AA162130	G protein alpha 11 subunit	Liver; cerebral cortex; pancreatic acinar cells; white adipose tissue; others
								SUMO-1 activating enzyme	Ubiquitous

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.003	1.11	0.50	0.00	0.00	2.16	0.55	ET63005	subunit 1 (SAE1); one subunit of a dimer that conjugates SUMO-1 (a small ubiquitin-like protein) to other proteins; SUMO-1 modification of I Kappa B alpha takes place on the same residues used for ubiquitination; blocks NF kappa B-dependent transcriptional activation	
								Phospholipase C gamma 1; Ubiquitous; hepatocytes; hepatic substrate of many growth factor stellate cells; vascular smooth receptor and nonreceptor tyrosine muscle; vascular endothelial cells kinases; produces second messenger molecules that are elements of signal transduction pathways related to cell proliferation.	
0.001	0.97	0.15	0.48	0.11	1.08	0.07	U58513	Rho kinase (p160, ROCK-2); Rho Ubiquitously expressed except in the is a small GTPase; brain and muscle serine/threonine coiled coil-forming protein kinase; downstream targets include LIM-kinase 1, which phosphorylates cofilin, an actin-depolymerizing factor; regulates actin cytoskeletal reorganization; Rho activity enhances secretion; phosphorylation of myosin light chain and moesin may prevent pathologic platelet activation during atherogenesis.	
0.002	1.48	0.47	0.00	0.00	1.26	0.23	ET61257	Map kinase kinase kinase (MEKK 1); serine-threonine kinase; regulates sequential protein phosphorylation pathways involving mitogen-activated protein kinases (MAPKs), including some Jun kinases	
0.002	1.10	0.41	0.00	0.00	1.25	0.22	U85608 (was	Mitogen-activated protein kinase Liver (15 times higher in fetal than (MAPK); signal transduction; adult); ubiquitous	

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.004	1.09	0.08	0.12	0.20	0.89	0.32	ET62570	important in cell proliferation, differentiation, and apoptosis; induced by epidermal growth factor; activation of MAPK induces c-Fos and c-Jun; CR reduces the age related decline in MAPK activation Mad homologue Smad5; Liver downstream component in the TGF-beta family signaling cascade, transduces signals from the cell surface to the nucleus; participates in regulation of gene expression; essential in left/right isomerism and liver development; essential for angiogenesis	

0.001 1.24 0.31 0.00 0.00 1.18 0.27 D50095 Histamine H1 receptor; GTP- Liver, brain, spleen (ubiquitous)

binding protein-coupled receptor; coupled to phosphoinositide turnover-calcium mobilization signaling pathway; regulates insulin-like growth factor I expression and cell proliferation; modulates IL-6 action; regulates physiological functions in neurons; regulates transport of thyroxine into hepatocytes

0 1.09 0.16 0.00 0.00 1.15 0.13 U60330 Ki antigen (PA28 gamma); cell Liver, neurons, proliferation; the interferon- distribution

gamma (IFN-gamma)-inducible PA 28 activator complex enhances the generation of class I binding peptides by altering the cleavage pattern of the proteasome
Interferon-activatable gene [204]; Nucleoi mediates antimicrobial,

-106-

P	CR	std	CON	std	SW	std	GonBank	Description	Location
0.029	1.11	0.15	0.33	0.38	1.39	0.49	U40189	Immunomodulatory and cell growth-regulatory activities of interferons; increased up to 75-fold by alpha-interferon treatment	Liver
MEMBRANE RECEPTORS									
0	1.00	0.15	0.02	0.03	1.15	0.10	U58367	Pancreatic polypeptide/neuropeptide Y/receptor YY receptor (NPYR-D); G protein-coupled Neuropeptide Y receptor Neurons, vascular smooth muscle Y5/Y6/Y2b (referred to as both cells Y5 and Y2b, has now been designated as Y6 in literature); (NPY-Y6); (neuropeptide Y is an important regulator of energy balance in mammals through its orexigenic, antithermogenic, and insulin secretagogue actions; expressed abundantly in the central nervous system); NPY receptors mediate a variety of physiological responses including feeding and vasoconstriction	muscle
0.027	1.12	0.15	0.31	0.34	0.95	0.32	X76295	Melanocortin 5 receptor; G-Widely expressed protein-coupled receptor; stimulates adenylyl cyclase	
0.020	1.89	0.60	0.00	0.00	1.29	0.82	ET61559	Bradykinin B1 subtype receptor; Liver (ubiquitous) G protein-coupled membrane bound; T-kinogen modulation during acute phase protein synthesis	
0.013	2.14	0.64	0.17	0.16	1.38	0.69	X99581	Chemokine receptor; primary Liver and bone marrow receptor stromal cell-derived factor/pre-B growth stimulating factor; seven transmembrane domain receptor	
0.001	1.46	0.18	0.38	0.22	0.98	0.10	ET61693	Leptin receptor (OB-R); Lung, muscle, brain;	brain;

P	CR	std	CON	std	SW	std	GenBank	Description	transmembrane receptor	Location
0.000	1.52	0.10	0.00	0.00	0.97	0.19	U28404	Macrophage protein-1 alpha receptor; mediates growth inhibitory effects of the chemokine CD44; receptor for hyaluronan; cell surface glycoprotein; hyaluronan clearance from the blood; involved in lymphocyte homing and activation; BEK fibroblast growth factor receptor (BEK FGF receptor, FGF- others 2), membrane-spanning tyrosine kinase; activated by three members of the FGF family; activation causes the foregut endoderm to develop into the liver	inflammatory MIP-1 alpha receptor; growth inhibitory	bone, mesenchyme, notochord and liver (Am J Clin Nutr 1999 Jan;69(1):18-21)
0.017	1.10	0.20	0.48	0.29	1.12	0.12	U57612			
<0.001	1.24	0.25	0.00	0.00	1.28	0.24	M86441			
<0.001	1.04	0.05	0.00	0.00	1.13	0.20	U56734	Member of the mannose receptor (calcium dependent) lectin family; critical for processes from cell adhesion to antigen presentation; includes the phospholipase A2, and the DEC 205 receptors; Macrophage factor-1 (CSF-1) receptor		Widespread tissue distribution; fetal sites; endothelialized sites; chondrocytes in cartilaginous regions of the embryo
0.002	1.17	0.15	0.06	0.11	1.27	0.38	X06368			
0.001	1.13	0.15	0.02	0.03	1.21	0.34	X83933	Ryanodine receptor type 2; Ca2+ channels of the ER; intracellular release channels controlling cytosolic calcium levels.		cardiac muscle; neurons; most excitable cells; liver
0.003	1.19	0.38	0.00	0.00	1.23	0.31	x57349	Transferrin receptor; cell surface		Liver

P	CR	std	CON	std	SW	std	GenBank	Description	Location
<0.001	0.98	0.26	0.00	0.00	1.10	0.03	X84896	glycoprotein; cell growth; binds the major serum iron-transport protein, transferrin, and mediates cellular iron uptake	
0	1.09	0.16	0.00	0.00	1.15	0.13	U60330	P2X purinergic receptor (P2XR) channels bind extracellular ATP and mediate Ca(2+) influx	Liver; ubiquitous
								Ki antigen (PA28 gamma); proliferation; the interferon-distribution gamma (IFN-gamma)-inducible PA28 activator complex enhances the generation of class I binding peptides by altering the cleavage pattern of the proteasome	cell Liver, neurons, broad tissue

CYTOSKELETON
NF-M gene for middle-molecular-mass neurofilaments (like keratins)

0.022	2.47	0.20	0.00	0.00	1.60	1.35	X05640	NF-M gene for middle-molecular-mass neurofilaments (like keratins)	Epithelial cells (mainly liver and brain)
0.006	1.07	0.19	0.40	0.23	1.09	0.10	ET62211	Formin; reorganization of the cytoskeleton, cytokinesis, stress fiber formation, and transcriptional activation of the serum response factor	
0.033	1.42	0.83	0.00	0.00	1.41	0.51	X57377	Myosin heavy chain gene; novel CNS and unique C-terminal region	cephalic ganglia, and spinal ganglia; lld skeletal myosin heavy chain gene expressed in fat-storing cells (FSC, lipocytes, or lto cells) of regenerating liver
0.012	1.06	0.07	0.38	0.26	1.22	0.32	ET61336	Nonmuscle myosin heavy chain IIB; cell motility	CNS; lld skeletal myosin heavy chain gene expressed in fat-storing cells (FSC, lipocytes, or lto cells) of regenerating liver
0.001	1.62	0.35	0.00	0.00	1.12	0.31	M91602	Myosin light chain 2; contractile protein	fat-storing cells (FSC, lipocytes, or lto cells) of regenerating liver; muscle
0.000	1.90	0.15	0.00	0.00	0.97	0.35	VO0830	Epidermal keratin	subunit; Liver (bile duct epithelium, epithelial

P	CR	std	CON	std	SW	std	GenBank	Description	Location
0.001	0.97	0.15	0.48	0.11	1.08	0.07	U58513	intermediate filament protein; cells maintenance of epidermal cell shape and resistance to mechanical trauma	
								Rho kinase (ROCK-2); (Rho is a Ubiquitously expressed except in the small GTPase; serine/threonine brain and muscle protein kinase); Rho activity enhances secretion; phosphorylation of myosin light chain	
0.038	0.97	0.47	0.49	0.02	1.32	0.20	ET61218	Microtubule-associated protein 4 (MAP4); co-localizes with microtubules; expressed during development; likely involved in differentiation	Most cell types including liver

ANTI-TUMOR SUPPRESSORS/ANTI-TUMOR FACTORS								
0.006	1.12	0.23	0.35	0.30	1.33	0.19	X97719	Friend-virus-susceptibility-1 gene (Fv1); prevents or delays spontaneous or experimentally induced viral tumors
0.029	1.77	1.69	0.00	0.00	3.00	0.39	X74671	Neurofibromatosis type 2 gene; Ubiquitous tumor suppressor gene; cytoskeleton-membrano linker; mutant leads to CNS tumors
0	0.91	0.19	0.00	0.00	1.08	0.06	ET61211	RNA-dependent EIF-2 kinase; double-stranded (ds) RNA-dependent protein kinase (PKR); key mediator of antiviral effects of interferon (IFN); active player in apoptosis

FUNCTION UNKNOWN								
0	1.23	0.24	0.00	0.00	1.13	0.16	X96737	Synaptobrevin-like gene (SYBL1); Ubiquitous housekeeping gene; X-linked; inactivated on one X in every female cell, and also inactive on the Y of male cells
0.007	1.35	0.59	0.00	0.00	1.21	0.22	ET62791	WW domain binding protein 6; Uncharacterized WW domain is a globular protein

P	CR	std	CON	std	SW	std	GenBank	Description	Location
								domain that is involved in mediating interaction and that ultimately participates in various intracellular signaling events; WW domain mediates protein-protein interaction by binding proline-rich modules in ligands.	

APPENDIX B

Low-Hi-Low p value	CR-ave. 0.001	std 0.77	Cont-ave 1.84	std 0.20	Cont-ave 0.06	std 0.73	Sw-ave 0.28	GenBank M95599	Name/Description Homeobox-containing protein (Hox-1.1)	Tissue Most abundant in embryos and progressively decreases during further embryonic development.
0.001	0.54	0.04	1.85	0.27	0.91	0.28	X58196		Mouse H19 gene: The H19 gene produces an abundant stage of development, and developmentally regulated transcript accumulates to high levels in of unknown function in normal tissues of endodermal and embryos. It is subject to mesodermal origin After birth transcriptional regulation by parental the gene is expressed in all imprinting, which results in the tissues except skeletal muscle. maternally inherited gene being A muscle specific isoform has expressed and the paternally also been cloned inherited gene being repressed.	
0.002	0.89	0.23	2.14	0.46	0.79	0.05	X99807		Selenoprotein P: covalently bound Liver, testis, brain, gut, and 8-12 selenocysteine residue. Its hematopoietic cells concentration is sensitive to the selenium status of the animal. Its function is unknown.	
0.005	1.17	1.26	4.28	0.80	0.75	0.16	J04953		Gelsolin: a Ca2+- and Ubiquitous polyphosphoinositide 4,5-bisphosphate (PIP2)-regulated actin filament severing and capping protein that is implicated in actin remodeling in growing and in apoptotic cells	
0.044	0.68	0.78	1.96	0.53	0.33	0.58	L23971		Fragile X mental retardation Brain syndrome protein (Fmr1) (mouse homologue): Fragile X Mental Retardation Syndrome is the most common form of hereditary mental retardation, and is caused by defects in the FMR1 gene. FMR1 is an RNA-binding protein and the syndrome results from lack of	

Low-Hi-Low p value	CR-ave.	std	Cont-ave	std	Sw-ave	std	GenBank	Name/Description expression of FMR1 or expression of a mutant protein that is impaired in RNA binding. The specific function of FMR1 is not known	Tissue
<u>Not reported in liver, muscle, brain, blood:</u>									
0.032	0.18	0.31	11.84	8.02	0.00	0.00	L02241	Mouse protein kinase inhibitor protein (testicular isoform): inhibitor protein of the cAMP-dependent protein kinase. This isoform of PKI is reported found only in testis	Testis specific
0.017	1.24	1.37	4.54	1.85	0.16	0.26	D89901	High-glycine tyrosine keratin type Hair II.3	
<u>Blood, T and B cells</u>									
0	0.77	0.12	2.89	0.34	1.23	0.42	X14061	Beta-globin complex DNA for γ , Blood bH0, bH1, b1 and b2 genes, bH2 and bH3 pseudogenes:	
0.004	0.29	0.27	3.06	1.00	0.98	0.37	X53247	EN-7: Has 100% seq homology T, B and myeloid hemopoietic with RAS-related C3 botulinum cells substrate 2 (Rac2): a member of the ras gene superfamily. mRNA expression is restricted to the cells of hemopoietic lineages, mRNA levels increase with the terminal differentiation of hemopoietic cells into granulocytes.	
0.008	0.79	0.13	2.15	0.61	0.94	0.18	U09010	Mannose-binding protein A (Mb11): a Blood serum protein, a member of a family of collagenous lectins (collectins), that activates the complement system after binding to glycoconjugates found on the surface of microorganism	
0.022	0.72	0.05	2.55	0.95	1.21	0.38	M22531	Mouse complement C1q B chain: Macrophages Mouse complement component C1q	

Low-Hi-Low p value	CR-ave.	std	Cont-ave	std	Sw-ave	std	GenBank	Name/Description	Tissue
<u>Energy Metabolism / Biosynthesis</u>									
0.006	0.85	0.15	2.57	0.75	0.90	0.26	Y00309	Lactate dehydrogenase-A (LDH-A)	Liver, muscle
0.018	0.97	0.15	2.87	1.18	0.73	0.24	X02520	Lactate dehydrogenase isoenzyme	A4 Liver, muscle
0.008	0.92	0.13	2.22	0.64	0.84	0.14	J05277	Hexokinase(HK) : catalyzes the first step in glucose metabolism, that is, the conversion of glucose to glucose-6-phosphate (G6P)	Liver, muscle
0.047	0.92	0.07	2.10	0.88	0.79	0.33	X58426	Hepatic triglyceride lipase: an important enzyme that is involved in the metabolism of chylomicrons, intermediate density lipoproteins, and high density lipoproteins	
0.001	0.00	0.00	43.66	12.59	1.17	1.77	U84207	CTP:phosphocholine cytidyltransferase:	Ubiquitous
<u>Extracellular Matrix</u>									
0.009	0.83	0.17	2.32	0.67	1.02	0.22	M18194	Phosphatidylcholine (PC) is the most abundant eukaryotic phospholipid and serves critical structural and cell-signaling functions. CTP:phosphocholine cytidyltransferase (CT) is the rate-limiting enzyme in the CDP-choline pathway of PC biosynthesis, which is utilized by all tissues and is the sole or major PC biosynthetic pathway in all non-hepatic cells	

<u>Extracellular Matrix</u>									
0.009	0.83	0.17	2.32	0.67	1.02	0.22	M18194	Fibronectin (FN): an extracellular matrix protein, is involved in the adhesion and migration of hematopoietic cells, found in many	Ubiquitous ?

Low-Hi-Low p value	CR-ave. std	Cont-ave std	Sw-ave std	GenBank	Name/Description	Tissue
					extracellular matrices as well as being abundant plasma proteins. The plasma isoforms of fibronectin, which are synthesized in the adult by liver hepatocytes, differ from those derived from most other cells and tissues due to alternative mRNA splicing	

Protein Turn-Over / Transport / Processing
0 0.83 0.02 3.40 0.25 1.13 0.38 ET61037

Polyubiquitin: Ubiquitin is an Ubiquitous omnipresent protein found in all eukaryotes so far analysed. It is involved in several important processes, including protein turnover, chromosome structure and stress response

0 0.73 0.12 2.11 0.33 0.98 0.06 X70303
Proteasome subunit MC3 (alpha Ubiquitous type): The proteasome is a multisubunit 20 S proteinase complex involved in ubiquitin-dependent and -independent intracellular protein metabolism.

0.001 0.00 0.00 16.01 3.18 2.78 3.98 D87899
ADP-ribosylation factor 2 (ARF2) Ubiquitous ADP-ribosylation factors (ARFs) are a family of small GTP-binding proteins that are involved in the formation of coated transport vesicles for protein secretion through the endoplasmic reticulum and Golgi vesicular trafficking system

0.063 0.81 0.17 3.06 1.71 1.01 0.29 D78645
Glucose-regulated protein 78 Liver, adipose, brain, heart, kidney, lung, spleen, muscle, small intestine.

Low-Hi-Low p value	CR-ave.	std	Cont-ave	std	Sw-ave	std	GenBank	Name/Description	Tissue
<u>Signal Transduction</u>									
0.004	1.05	0.32	2.48	0.57	0.83	0.09	M13964	Stimulatory G protein of adenylate cyclase, alpha chain: component signal transduction systems.	Ubiquitous
<u>Transcription Factor</u>									
0.037	0.94	0.10	2.14	0.85	0.82	0.24	X57638	Peroxisome proliferator activated receptor alpha: is activated by a diverse class of rodent hepatocarcinogens that causes proliferation of peroxisomes	Liver

APPENDIX C

Low-Low-Hi p value	CR-ave std	Cont-ave std	SW-ave std	GenBank	Name/Description	Tissue			
0.013	1.48	1.77	1.09	0.94	4.52	1.34	M61705	Brain creatine kinase B: The creatine kinase-B (CKB) enzyme is proposed to have a pivotal role in the regeneration of ATP in the nervous system.	brain
0.013	1.48	1.77	1.09	0.94	4.52	1.34	M61705	Intestinal alkaline phosphatase (IAP); intestine, (kidney) a membrane-bound metalloenzyme catalysing cleavage of inorganic phosphate nonspecifically from a wide variety of phosphate esters.	intestine, (kidney)
0.015	0.00	0.00	0.01	0.01	15.52	8.36	D78353	Eosinophil peroxidase; is one of the eosinophil-granule enzymes in the eosinophil-specific granules and is distinct from myeloperoxidase.	one of the blood (eosinophils)
0.001	1.12	1.18	0.77	0.66	6.74	1.50	M12930	Erythropoietin; The glycoprotein produced in the kidney or hormone erythropoietin regulates the liver of adult and the liver level of oxygen in the blood by of fetal or neonatal modulating the number of circulating mammals erythrocytes.	kidney or liver of adult and the liver of fetal or neonatal
0	0.17	0.29	0.15	0.14	9.80	2.34	J05149	Insulin receptor (IR)	ubiquitous
0.009	0.00	0.00	0.00	0.01	7.52	3.82	U65586	Telomeric protein mTRF1; a telomere ubiquitous repeat binding factor packages the long tandem arrays of the double-stranded TTAGGG sequence motif in mammalian telomeres.	ubiquitous
0.016	0.00	0.00	0.01	0.01	34.54	20.11	X14897	Fos B; a nuclear protein of 338 amino acids presenting a 70% homology with c-fos, whose expression is activated during G0/G1 transition. Similar to c-fos, fos B protein plays a role in control of gene expression.	338 amino acids presenting a 70% homology with c-fos, whose expression is activated during G0/G1 transition. Similar to c-fos, fos B protein plays a role in control of gene expression.

Low-Low-Hi p value	CR-ave std	Cont-ave std	SW-ave std	GenBank	Name/Description	Tissue		
0.005	0.98	0.98	0.56	3.62	1.12	X66225	Retinoid X receptor-gamma (mRXR- ubiquitous (one isoform in gamma); a kind of nuclear receptors adrenalis, kidney, and of retinoids which play a liver; another in brain and fundamental role in regulating normal lungs; both are expressed cell proliferation and differentiation. strongly in heart and The retinoid X receptors (RXRs) muscle)	
							regulate gene expression by forming transcriptionally active heterodimeric RAR(the retinoic acid receptors)/RXR or homodimeric RXR/RXR complexes on DNA.	
0.023	2.31	3.18	1.84	1.63	16.67	9.38	X54239	Evx1 protein; A murine even-skipped embryos (eve) homologue. During embryogenesis, Evx 1 shows a biphasic expression pattern. The early and late transcription pattern is compatible with a role of Evx 1 in specifying posterior positional information along the embryonic axis and in specifying neuronal cell fates within the differentiating neural tube.
0.006	0.00	0.00	0.00	0.00	55.35	24.84	X70800	Wnt-11 protein; The Wnt gene family embryos encodes a set of signalling arteriosus, somites at the molecules, thought to play an medial junction of the important role in key processes of dermatome and the embryonic development. WNT11 has myotome, and limb bud possible roles in the development of mesenchyme) skeleton, kidney and lung.
0.039	1.10	0.18	0.44	0.57	4.73	3.06	X99796	Tsx; a gene of unknown function tetis that was shown to be expressed specifically in the testis. It locates 3' form the Xist gene which involves in the X inactivation.

Low-Low-Hi		Cont-ave		SW-ave		GenBank	Name/Description	Tissue
p value	CR-ave	std	std	std	std			
0.043	0.00	0.00	0.01	0.02	15.23	11.16	Rds protein/peripherin; photoreceptor disc membrane-associated glycoprotein involved in retinal degeneration slow. It is 92.5% identical to the sequence of the bovine photoreceptor-cell protein peripherin. It may function as an adhesion molecule for stabilization of the outer segment discs.	a eye?
0	0.99	1.04	0.68	0.59	15.29	2.39	Hepatitis virus MHV-A59 defective ? interfering (DI) RNA; RNA of defective-interfering virus formed earlier in infection, can mediate homologous interference.	
						X14770		
						X57302		

APPENDIX D

Hi-Hi-Low p value	CR-ave	std	CONT- ave	std	Switched- ave	std	GenBank	Name/Description	tissue
0	1.42	0.20	1.17	0.30'	0.04	0.07	AFO09414	SOX11; Sox genes, which encode ubiquitous transcription factors related by a DNA-binding motif termed the HMG box, are known to have diverse roles in vertebrate differentiation and development. SOX11 was suggested a role in neuronal maturation and an additional role in tissue modelling during development.	ubiquitous
0.041	1.01	0.43	1.21	0.25	0.38	0.23	L40156	surfactant protein D (Sftp4); Surfactant predominantly in lung, and protein-D (SP-D) is a collectin found also in heart, stomach, associated with surfactant in the lung, and kidney but not in brain SP-D has also been functionally characterized as an opsonin for diverse microorganisms and a chemoattractant for phagocytic cells.	
0.013	1.02	0.10	1.26	0.17	0.54	0.29	D86176	Phosphatidylinositol 4-phosphate kinase- α ; the type 5- highly expressed in the phosphatidylinositol- 4-phosphate 5- detectable in the liver and kinase (PI4P5K) have been identified as skeletal muscle one of the cytosolic components required for ATP-dependent, Ca ²⁺ -activated secretion.	
0.032	1.16	0.33	1.31	0.27	0.61	0.07	Z36293	Sialoadhesin; Sialoadhesin is a expressed strongly by macrophage-restricted adhesion macrophages in lymphoid molecule of 185 kDa that mediates sialic and haemopoietic tissues acid-dependent binding to cells.	

APPENDIX E

Hi-Low- p value	CR- ave	std	CONT- ave	std	Switched-ave	std	GenBank	Name/Description	Tissue
0.001	3.65	0.92	0.32	0.10	1.10	0.33	D83262	Neuronal glutamate transporter EAAAT4; Brain (neurons) induces high-affinity uptake of L-glutamate that is dependent on external Na ⁺ .	Brain (neurons)
0.014	2.73	0.31	0.63	1.09	0.42	0.52	X90778	Histone H2B	Testis (epididymus)
0.017	2.25	0.34	0.79	0.74	0.51	0.50	M96760	rod outer segment membrane protein 1 eye? (Rom1); Rom-1 and peripherin are related retina-specific integral membrane protein localized to the photoreceptor disk rim, where they may act jointly in the photoreceptor disk biogenesis.	Testis (epididymus)
0.018	7.93	4.23	0.00	0.00	1.16	1.25	X14971	alpha-adaptin (A): Adaptins are components brain and liver of the adaptor complexes which link clathrin to receptors in coated vesicles. The alpha-adaptins, which are found exclusively in endocytic coated vesicles	Brain and liver
0.02	7.76	4.74	0.00	0.00	0.00	0.00	D49429	PW29: calcium binding protein with strongly oligoproline motif, a mouse homolog of expressed in the Mcd1pS.c./Rad21S.p., has been implicated testis, brain, functioning in sister chromatid cohesion. kidney and heart mast cell protease-4: a secretory granule connective tissue serine protease of the peritoneal connective tissue mast cells (CTMC).	Testis, brain, kidney and heart
0.022	10.70	6.08	0.00	0.00	1.38	1.61	M55617		
0.023	1.78	0.51	0.84	0.63	0.21	0.31	AF013253	preprocortistatin (Cort): Cortistatin is a 14-brain (cerebr. and residue putative neuropeptide with strong cortex and structural similarity to somatostatin and is hippocampus) expressed predominantly in cortical GABAergic interneurons. Administration of cortistatin into the brain ventricles specifically enhances slow-wave sleep, presumably by antagonizing the effects of acetylcholine on cortical excitability.	Brain (cerebr. and hippocampus)

Hi-Low-Low p value	CR- ave	std	CONT- ave	std	Switched-ave	std	GenBank	Name/Description	Tissue
0.032	2.12	0.81	0.73	0.61	0.37	0.39	U02982	secretogranin III (SgIII): an acidic brain- and chromogranin/secretogranin-like protein of pituitary-specific unknown function that is present in the storage vesicles of many neuroendocrine cells.	
0.033	1.70	0.28	0.70	0.52	0.54	0.45	U39818	tuberin (TSC2): the tuberous sclerosis 2 ubiquitous (TSC2) gene product, which contains an activity that specifically stimulates the intrinsic GTPase activity of Rap1a and may acts as a presumed tumor-suppressor.	
0.037	21.18	14.98	0.00	0.00	0.00	0.00	D17407	U2af1-rs1(SP2); encodes a protein with Ubiquitous significant similarity to U2 small nuclear ribonucleoprotein auxiliary factor small subunits, an essential mammalian splicing factor; an endogenous imprinted gene on the proximal region of chromosome 11. This gene is transcribed exclusively from the unmethylated paternal allele, while the methylated maternal allele is silent.	
0.038	16.26	11.58	0.00	0.00	0.00	0.00	X72862	Beta-3-adrenergic receptor; a member of the mainly expressed super-family of G protein-coupled receptors; in mouse brown plays a role in the control of cAMP and accumulation and may be involved in the adipose tissues control of energy expenditure in fat tissue.	
<u>Transcription Factor</u> 0.007	2.57	0.46	0.70	0.71	0.41	0.52	L10409	Fork head related protein (HNF-3 beta): in Adult liver, addition to its known functions as embryonic node, transcriptional activators in adult liver, play a notochord, floor role in body axis formation, neural tube plate and gut patterning and definitive endoderm formation during gastrulation.	

HI-Low-Low p value	CR- ave	std	CONT- ave	std	Switched-ave	std	GenBank	Name/Description	Tissue
0.007	36.94	12.40	0.00	0.00	6.27	10.87	X86368	Transcription factor FKH-2; a member of the Expressed in "winged helix" or "forkhead" transcription embryos factor family; expression patterns of the fkh-becomes 2 gene and HNF-3 beta, are overlapping in restricted to the early stages of gestation.	in and
0	12.24	3.07	0.00	0.00	0.80	1.39	X61754	Heat shock transcription factor 2; binds to the Ubiquitous heat shock element (HSE).	midbrain
0.001	4.43	0.96	0.00	0.00	1.05	0.77	L77247	Zinc finger protein (kid-1); a putative renal Kidney and eye transcription factor; regulation during ontogeny and in response to ischemia and toxic injury	
0.024	16.08	10.27	0.00	0.00	0.00	0.00	X92592	Fkh-5 (also known as Mf3 and TWH); a Specifically member of the 'winged helix' or 'forkhead' expressed in the transcription factor gene family developing central nervous system	
0.007	36.92	17.87	0.13	0.22	0.00	0.00	U66620	SWI/SNF complex 60 KDa subunit (BAF60a); Ubiquitous mammalian homologue of yeast SWI/SNF complex; also referred to as BRG1-associated factors (BAFs); facilitates the function of transcriptional activators by opposing chromatin-dependent repression of transcription, and (in mammals) is likely dedicated to developmentally distinct functions.	
0.005	1.95	0.59	0.87	0.26	0.22	0.17	U83148	NFIL3/E4BP4 transcription factor; nuclear Blood factor regulated by IL-3/adenovirus E4 promoter binding protein in a distinct growth factor-regulated signaling pathway that is responsible for the survival of early B-cell progenitors	

Cell Growth/Cycle

HI-Low-Low p value	CR- ave	std	CONT- ave	std	Switched-ave	std	GenBank	Name/Description	Tissue
0	14.42	3.83	0.00	0.00	0.00	0.00	L25602	Bone morphogenetic protein 2 (BMP-2); pleiotropic functions range from extracellular and skeletal organogenesis to bone generation and regeneration; structurally related to transforming growth factor- β s, activins, and inhibins	Ubiquitous
0.004	2.97	0.78	0.34	0.60	0.33	0.58	D89080	Fibroblast growth factor 10 (FGF10): has expressed important roles in mediating mesenchymal-epithelial cell interactions during embryogenesis. In particular, Fgf10 is predicted to function as a regulator of lung and limb development, prostatic growth and development and so on.	relatively abundantly in embryos and the brain, lung, and at lower levels in brain and heart
0.002	14.09	4.67	1.12	1.93	0.00	0.00	M30903	B lymphocyte kinase (blk); a Src family tyrosine kinase specific to B lymphoid cells	Blood (specifically expressed in the B cell lineage)
0.007	4.14	1.40	0.00	0.00	1.09	1.14	X59398	Tyrosine kinase receptor of the PDGFR/CSF1R family (Flt-3); involved in development and function of various lineages; unidentified ligand in gonads and hematopoietic systems.	of the various adult tissues including gonads and brain, in placenta, and nervous hematopoietic cells
0.008	1.64	0.34	0.00	0.00	0.71	0.62	U22399	Cdk-inhibitor p57KIP2 (KIP2); a potent binding inhibitor of several G1 cyclin/Cdk complexes; and is suggested to be involved in decisions to exit the cell cycle during development and differentiation.	High level expression in skeletal muscle, heart, lungs, and eye
Extracellular Matrix 0.023	24.61	5.47	0.00	0.00	7.30	12.64	M32136	alpha-1 type IX collagen structural component of matrix of connective tissues	a ubiquitous component of the extracellular matrix of connective tissues

Hi-Low-Low p value	CR- ave	std	CONT- ave	std	Switched-ave	std	GenBank	Name/Description	Tissue
0.035	2.93	1.06	0.64	1.10	0.81	0.21	U43541	s-laminin (also called laminin beta 2): a muscle homologue of the B1 (beta 1) chain of the widely distributed basal lamina (BL) glycoprotein, laminin. It may affect postsynaptic differentiation.	

DNA repair	14.29	8.65	0.00	0.00	2.67	3.79	L26320	Flap endonuclease-1 (FEN-1): an enzyme which functions in double-strand break repair flap resolution; it specifically cleaves DNA flap strands that terminate with a 5' single-stranded end; in addition to endonuclease activity, FEN-1 has a 5'-3' exonuclease activity which is specific for double-stranded DNA.	Ubiquitous
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APPENDIX F

Low-Hi-Hi p value	CR- ave	CR- std	Cont- ave	Cont- std	SW- ave	SW- std	GenBank	Name/Description	Tissue
0.005	0.46	0.08	1.07	0.27	1.22	0.14	L11333	Mouse carboxyesterase; dependent enzymes	serine- Predominantly in male livers
0.049	0.51	0.45	1.18	0.06	1.06	0.14	M74149	Creatine kinase B; plays an important role in buffering ATP and ADP levels heart, intestines in tissues which have intermittently high and fluctuating energy demands	brain, skeletal muscle,
0.014	0.56	0.06	1.16	0.25	1.27	0.27	M17122	Complement 4b-binding protein (C4b-binding protein); an abundant oligomeric plasma glycoprotein which controls the activation of the complement cascade through the classical pathway	intestines
0.02	0.30	0.39	1.16	0.32	1.38	0.34	U36393	TFEB; a member of the Liver, brain, skeletal muscle, microphthalmia-TFE (MiT) subfamily heart, spleen, lung, kidney, of basic helix-loop-helix leucine zipper testis (bHLH-ZIP) transcription factors.	
0.025	0.58	0.11	1.09	0.31	1.28	0.25	D70849	Zic3; encodes a zinc finger protein, is expressed in the developing or the adult stage. matured central nervous system in a highly restricted manner. It's the vertebrate homologue of Drosophila odd-paired, which may play an essential role in parasegmental subdivision and in visceral mesoderm development.	the cerebellum at
0.046	0.50	0.21	1.37	0.35	1.49	0.57	D37837	65-kDa macrophage cytosolic Hemopoietic cells protein; is phosphorylated specifically in LPS-stimulated murine macrophages. a murine homologue of human L-plastin, recently identified as a novel transformation-induced polypeptide of neoplastic human cells. Its function is implicated in macrophage activation by LPS.	

Low-HI-HI p value	CR- ave	CR- std	Cont- ave	Cont- std	SW- ave	SW- std	GenBank	Name/Description	Tissue
0.01	0.27	0.13	1.55	0.51	1.39	0.35	U04268	Mouse stem cell antigen Sca-2 Early thymic precursor and precursor; a member of the Ly-6 mature peripheral B cells (not family, a group of small cysteine-rich mature thymocytes and cell surface proteins that are peripheral T cells)	
0.018	0.51	0.05	1.20	0.24	1.37	0.40	D38580	anchored in the membrane by a glycosyl-phosphatidylinositol moiety. Vomeronal secretory protein I Specifically expressed in (VNSP I);secretory protein, member of vomeronasal and posterior the lipocalin superfamily glands of the nasal septum, the ducts of which open into the lumen of the vomeronasal organ	
0.024	0.27	0.08	1.03	0.07	1.48	0.67	M27501	Protamine 2; the predominant nuclear Testis-specific proteins of mammalian spermatozoa, is regulated during germ cell development	

APPENDIX G

208 known genes: 2-fold or greater in CR vs. Cont at old and young age
GenBank

Description Location

Transcription Factor / Nuclear Receptor		
Y00850	Zinc finger protein 2 (Zfp2); Mkr-2; differentiation and/or maintenance of neurons	Brain (Central and peripheral neurons)
X63963	Paired box protein (Pax-6); transcription factor	Developing CNS
X06762	Homeo box B7 (Hoxb7); transcription factor; embryonic development; haematopoiesis;	Developing embryo; blood; bone marrow cells; natural killer cells
X74040	Homeo box A9 (Hoxa9); transcription factor	Embryogenesis
X59251	Homeo box msh-like 1 (Msx1); transcription factor; early stage of eye developmental regulation in embryo	Embryogenesis
Z67747	Zinc finger protein 62 (Zfp62); a member of a multigene family encoding Zn mediated nucleic acid binding proteins	Embryonic development and Skeletal, cardiac muscle, and spleen in adult
M36516	Zinc finger protein 28 (Zfp28); a member of a multigene family encoding Zn mediated nucleic acid binding proteins	Embryonic development, testes in adult
U48721	Zinc finger protein 60 (Zfp60); a member of a multigene family encoding Zn mediated nucleic acid binding proteins; Kruppel associated boxes; associated with transcriptional control	Expressed transiently during muscle differentiation
X04435	Glucocorticoid receptor 1 (Gr11); energy balance; substrate uptake; liver	Liver
X74134	Nuclear receptor subfamily 2, group F member 1 (Nr2f1); COUP-TF1; orphan steroid hormone receptor; transcription factor	Liver
D00925	Transcription elongation factor A 1(Tcea1); transcription elongation factor	Liver
X89264	Zinc finger protein 37 (Zfp37); putative transcription factor; peroxisome proliferator responsive	Liver
X56182	Myogen factor 5 (Myf5); transcription factor	Liver and heart (embryonic)

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X76653	Nuclear receptor subfamily 2, group F member 2 (Nr2f2); apolipoprotein regulatory protein 1; member of the COUP-family of steroid hormone orphan receptors	Liver, lung, kidney
L24118	Tumor necrosis factor induced protein 2 (Tnfr2); putative transcription factor	Liver; monocytes
U36575	Nuclear factor of activated T cells, cytoplasmic 2 (Nfatc2); T cell transcription factor isoform	Lymphocytes
U19463	Tumor necrosis factor induced protein 3 (Tnfr3); putative helix-loop-helix transcription factor activated in T-cell acute lymphoblastic leukemia	Lymphocytes
U19463	Tumor necrosis factor induced protein 3 (Tnfr3); putative helix-loop-helix transcription factor activated in T-cell acute lymphoblastic leukemia	Lymphocytes
ET61028	Sine oculis-related homeobox 1 homologue (Drosophila) (Srx1); AREC3	Many cell-types during development
U13878	RE1-silencing transcription factor (Rest); transcription factor; represses expression of neuronal genes;	Many nonneuronal cells and tissues
Y12293	Forkhead box F2 (Foxf2); transcription factor; a developmental regulator in embryonic development	Mesodermal tissues and embryonic: central nervous system, eye, ear, and limb bud
X60034	Homeo box D1 (Hoxd1); transcription factor; neurogenesis	Neurogenesis
ET63177	Pax-4 (Pax4); a paired-box transcription factor that plays an important role in the development of pancreatic beta/delta cells; role in endocrine cell development	Pancreatic islet endocrine progenitor cells
M81077	T-cell acute lymphocytic leukemia 2 (Tal2); putative basic helix-loop-helix transcription factor activated in T-cell acute lymphoblastic leukemia	T cells
X72697	Meiosis-specific XMR (Xmr); transcriptional activator function?	Testis; lymphoid cell lineages; nuclei of spermatocytes, early in the prophase of the first meiotic division, and later becomes concentrated in the XY nuclear subregion
X76858	E4F transcription factor 1 (E4f1); DNA binding transcription factor	Ubiquitous

208 known genes: 2-fold or greater in CR vs. Cont at old and young age

GenBank	Description	Location
X15842	Reticuloendotheliosis (Rel); c-rel: member of the Rel/nuclear factor (NF)-kappaB family of transcriptional factors	Ubiquitous
X60136	Trans-acting transcription factor 1 (Sp1); transcription factor; component of some hepatic glucose response elements	Ubiquitous
X80508	Yes-associated protein, 65 kDa (Yap); transcription activator	Ubiquitous
ET61461	G-protein coupled receptor; poorly characterized	Unknown

Translation / Splicing / RNA Processing Factors

Y08260	Cytoplasmic polyadenylation element binding protein (Cpeb); RNA binding protein that promotes polyadenylation and translational activation	Ubiquitous
X91656	Splicing factor arginine/serine-rich 3 (Sfrs3); splicing factor belonging to the highly conserved family of SR proteins; regulation of constitutive and alternative splicing	Ubiquitous
U28419	Translation initiation factor eif-4C homologue	Ubiquitous

Signal Transduction / Cell Cycle and Growth

L28756	Gonadotropin releasing hormone receptor (Gnrhr); G-protein-coupled receptor; activates MAPK cascades	Brain (anterior pituitary), reproductive organs
Z31663	Activin A receptor, type 1B (Acvr1b); serine/threonine kinase receptor; a downstream transducer of activin signals	Brain - (cerebral cortex, olfactory tubercle, and hippocampus)
X66118	Glutamate receptor, ionotropic, kainate 1 (Grik1)	Brain (CNS)
L41495	Protein integration site (Pim2); serine/threonine kinase 2; cell proliferation; mitogen stimulated; long-term potentiation in hippocampus	Brain (CNS), Immune and epithelial cells
Z72000	B-cell translocation gene 3 (Btg3); negative control of cell cycle	Brain, fibroblast

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X79082	Eph receptor A7 (Epa7); developmental kinase 1; member of receptor tyrosine kinase family	Brain, testes and spleen
Z27088	Relaxin (Rln); insulin gene family; remodeling of collagen	Brain, uterus, prostate gland, pancreas and kidney
X58287	Protein tyrosine phosphatase, receptor-type, M (Ptprm)	Capillaries in developing neural tissue, lung;
ET61628	Phosphatidylinositol 3-kinase regulatory subunit, polypeptide 1 (p85alpha) (Pik3r1); role in cell growth, differentiation, survival, and vesicular transport	Liver
V00829	kallikrein 6 (Klk6); a member of multigene subfamily of serine protease that act on a diverse number of substrates, including several growth factors and extracellular matrix glycoproteins and proteinases;	Liver
Z22821	Rab23; Ras-related small GTPase; protein trafficking; central regulatory elements of the intracellular transport machinery; regulate vesicle docking and fusion, organelle dynamics	Liver
M26613	Guanine nucleotide binding protein, alpha transducing 1 (Gnat1)	Liver and others
M53658	Guanine nucleotide binding protein beta 4 (Gnb4)	liver, brain, blood cell
U38501	Guanine nucleotide binding protein, alpha inhibiting 1 (Gnai1)	Liver; cerebral cortex; pancreatic acinar cells; white adipose tissue; others
D30743	Wee1 homologue (S. pombe) (Wee1); inhibits entry into mitosis by phosphorylation of the Cdc2 kinase	Lymphocytes
ET61263	Spleen protein kinase (Syk); signal transduction	Lymphopoiesis; haematopoietic cells, platelets, macrophages and neutrophils
Z48757	Intestinal tyrosine kinase; protein tyrosine kinase	Mammary gland and intestine
ET61665	Discs-large tumor suppressor homologue (digh1); important role in the localization and function of glutamate receptors and K(+) channels	Neurons; epithelial cells
ET61399	G protein alpha olfactory subunit; sensory transduction	Olfactory epithelium
M14537	Acetylcholine receptor beta (Acrb)	Skeletal muscle

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X92523	Calpain 3 (Capn3); intracellular calcium-dependant cysteine proteinase; tissue specific myofibrogenesis, modifies ryanodine receptor Ca2+ release channel	Skeletal muscle
Z11574	Son of sevenless 1, homologue 1 (Drosophila) (Sos1); Ras-specific exchange factor	T cells
Z11664	Son of sevenless 2 homologue 2 (Drosophila) (Sos2); Ras-specific exchange factor	T cells
U10440	Cyclin-dependent kinase inhibitor 1B (P27) (Cdkn1b); cell cycle	Ubiquitous
ET61257	MAP kinase kinase kinase (Map3k1); serine-threonine kinase; regulates sequential protein phosphorylation pathways involving mitogen-activated protein kinases (MAPKs)	Ubiquitous
S45828	NIMA-related expressed kinase (Nek1)	Ubiquitous
U65313	Ras-GTPase-activating protein SH3-domain binding protein 2(G3bp2-pending); essential for Ras signaling;	Ubiquitous
ET62740	Ankyrin 3 (Ank3); implicated in Na(+) channel clustering and activity; neuronal axons	Wide distribution

<u>Hormone/Growth Factor/Cytokine/Chemokine</u>		
X07962	Interleukin 7 (IL-7); growth factor	B cell progenitors
U66201	Fibroblast growth factor homologous factor 1 (FGF-1); nervous system development and function	Brain, skeletal muscle and other
U66204	Fibroblast growth factor homologous factor 4 (FGF-4); involved in nervous system development and function	Brain (CNS)
X99572	C-fos-induced growth factor (FIGF); secreted dimeric protein member of the platelet-derived growth factor/vascular endothelial growth factor (PDGF/VEGF) family; mitogenic and morphogenic activity on fibroblasts.	Endothelial cells, expressed in many tissues (including liver) during embryonic development
J00424	Interferon-beta	Liver
X07751	Thyroid hormone receptors	Liver
ET62118	Keratinocyte growth factor/fibroblast growth factor-7 precursor (mKGF)	Liver epithelial cells

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X57413	Transforming growth factor-beta2 (TGFbeta2); cell proliferation	Liver stellate cells
ET62976	Macrophage inflammatory protein receptor 1-alpha 2; Induces mobilization of intercellular calcium; beta-chemokine; leucocyte chemoattractant	Liver, brain, thymus, heart, spleen
X53798	Small inducible cytokine subfamily, member 2 (Scyb2)	Macrophages
V00428	Lysozyme; signaling molecule for mast cells which respond with histamine secretion	Macrophages, paneth cells (located in duodenal crypts)
ET61471	Mast cell protease 7 (mMCP-7); mouse mast cell tryptase 2; released when mast cells are activated	Mast cells
U28404	Macrophage inflammatory protein-1 alpha receptor; mediates growth inhibitory effects of the chemokine	MIP-1alpha RL2 in liver and spleen
U58367	Neuropeptide Y receptor Y5/Y6/Y2b (referred to as both Y5 and Y2b, has now been designated as Y6 in literature); (NPY-Y6); neuropeptide Y is an important regulator of energy balance in mammals through its orexigenic, antithermogenic, and insulin secretagogic	Neurons, vascular smooth muscle cells
U10092	Killer cell lectin-like receptor, subfamily A, member 6 (Klra6); Ly-49F; NK cell surface antigen; determinant of IL-2-activated NK cell specificity; inhibitory receptor for interaction with MHC class I proteins	NK cells
M31419	Interferon-activatable gene (204); mediates antimicrobial, immunomodulatory and cell growth-regulatory activities of interferons; increased up to 75-fold by alpha-interferon treatment	Nucleoli
X04725	Preproinsulin gene I	Pancreas and islets
X04724	Preproinsulin gene II	Pancreas and islets
M92416	Fibroblast growth factor (Fgf6); Fgf6 is the only known member of the FGF family whose expression is restricted to the muscle cell lineage during development	Skeletal muscle
X58995	Calmodulin-dependent protein kinase IV; multifunctional, serine-threonine protein kinase	T cells
V00756	Interferon beta (type 2)	T cells
M26271	Interleukin 2 receptor; cytokine receptor	T cells

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
D13695	Lymphocyte antigen 84 (Ly84); signal transduction protein 2	T cells
M28587	Alpha leukocyte interferon (MuFN-alpha A); inhibition of cell proliferation	Ubiquitous
U49866	killer cell lectin-like receptor, subfamily A, member 3 (Klra3); interact with MHC class I (MHC-I) molecules on target cells	natural killer cell

DNA Replication / Repair / Apoptosis

L31532	Bcl-2-beta; suppresses programmed cell death	Liver
Z37110	Cyclin G; augments apoptosis; target gene of P53	Liver
U25691	Lymphocyte specific helicase; putative role in replication, repair, recombination and transcription	T and B cells
L15435	Tumor necrosis factor (ligand) superfamily, member 9 (Tnfsf9), a member of the TNF family; proapoptosis factor	T cells
ET62746	Brca2 gene; familial breast cancer susceptibility gene; important in DNA double-strand break repair (DSBR) and DNA damage-induced cell-cycle checkpoint activation	Ubiquitous
U04269	Caspase 1 (Casp1); cysteine protease mediator of apoptosis	Ubiquitous
X58472	KIN17, DNA-binding, nuclear protein, upregulated in response to UV and ionizing radiation; accumulated in the nucleus of proliferating fibroblasts; overexpression inhibits progression into S phase	Ubiquitous
ET63479	MLH1; DNA mismatch repair gene; function in mutation avoidance; cell cycle checkpoint control; cytotoxicity of various DNA-damaging agents; transcription-coupled nucleotide excision repair.	Ubiquitous
ET61211	RNA-dependent EIF-2 alpha kinase; double-stranded (ds) RNA-dependent protein kinase (PKR); key mediator of antiviral effects of interferon (IFN); active player in apoptosis	Ubiquitous

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X74351	XPAC (Xeroderma Pigmentosum group A Correcting protein); nucleotide excision DNA repair	Ubiquitous
X71978	Ft1, a novel gene related to ubiquitin-conjugating enzymes; deletion leads to partial syndactyly of the limbs and thymic hyperplasia, suggesting impaired programmed cell death	

Transporter / Channel / Pumps

Y09108	sodium channel, type X, alpha polypeptide (Scn10a); ion channel; small-diameter sensory neurons associated with unmyelinated axons express a tetrodotoxin-insensitive (TTX) voltage-gated sodium channel (VGSC); may play an important role in the transmission of nociceptive information	Brain
U14420	gamma-aminobutyric acid (GABA-A) receptor, subunit beta 3 (Gabra3); link binding of GABA (gamma-aminobutyric acid) to inhibitory chloride flux	Brain (CNS)
U48397	Mercurial-insensitive water channel 1 (mMWC1); allows water and small solutes to pass	Brain, eye, lung, kidney, heart, muscle
X97281	K + channel beta-subunit, ion channel	Brain, Kidney
ET61590	Putative capacitative calcium entry channel (Trp6); involved in calcium entry secondary to activation of receptors coupled by the Gq class of G protein.	Brain, kidney, heart and lung
X63100	Gap junction membrane channel protein alpha 7 (Gja7); connexin45; gap junction protein; ion exchange channel	Brain, lung, brain, heart, intestine, kidney
ET63385	Gap junction membrane channel protein beta 6 (Gjb6); connexin 30; forms transmembranous gap junction channels between adjacent cells	Brain; skin
L42340	Sodium channel 27	Brain; tissue distribution and protein poorly characterized
ET61440	Trp-related protein 3; cation channel; essential for agonist-activated capacitative Ca2+ entry; putative subunits of CCE channels	Endothelium
M23383	Glucose transporter 2	Liver
D29797	Syntaxin 3A, IER vesicular transport, membrane fusion	Liver

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X83933	Ryanodine receptor type 2; form Ca ²⁺ channels in the membrane of the ER; intracellular calcium release channels controlling cytosolic calcium levels.	Liver, neuron, cardiac muscle
ET62883	Skeletal muscle chloride channel	Skeletal muscle
X80417	MB-IRK2 (second class of inward rectifier potassium channels); ion channel	Skeletal muscle, heart, kidney
M30440	Potassium channel gene (MK2); shaker subfamily	T cells; myelinating Schwann cells
U03723	AKR voltage-gated potassium-channel (KCNA4)	Ubiquitous
U49393	ATPase (Atp2a3); Ca ²⁺ + transporting, ion pump	Ubiquitous
X84896	Purinergic receptor P2X, ligand-gated ion channel 1 (P2rx1); mediate Ca ²⁺ influx; liver, ubiquitous;	ubiquitous
ET63248	RAN binding protein 1 (RANBP1); RAN-specific GTPase-activating protein; required for nucleocytoplasmic transport of many types of cargo	Ubiquitous
U19521	Vesicle transport protein (munc-18c)	Ubiquitous

Chromatic Structure

J03482	Histone H1; chromatin structure	Ubiquitous
ET62262	Histone H1b; chromatin structure	Ubiquitous
X16495	Histone H2A; chromatin structure	Ubiquitous
ET62908	Histone H2B; chromatin structure	Ubiquitous
U62672	Histone H3.1-D (H3-D) and histone H4-D (H4-D); chromatin structure	Ubiquitous
U62675	Histone H3.2-616, and histone H2b-616; chromatin structure	Ubiquitous
U62669	Histone H3.2-F (H3-F), histone H2a.1-F (H2a-F), histone H2b-F (H2b-F); chromatin structure	Ubiquitous

Biosynthesis and Metabolism

X92122	UDP-glucuronosyltransferase 8 (Ugt8); key enzyme in cerebroside and sulfate biosynthesis; glycosphingolipids; most abundant in myelin	Brain (CNS and PNS); tissue distribution poorly characterized
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208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
Y12257	Glutamic acid decarboxylase 67 kD; a rate-limiting enzyme in the biosynthesis of the neurotransmitter, gamma-aminobutyric acid (GABA)	Brain (CNS)
D49438	25-hydroxyvitamin D3 24-hydroxylase; metabolism and regulation of vitamin D3	Kidney and intestine.
X07888	3-hydroxy-3-methylglutaryl coenzyme A reductase; key regulatory enzyme for cholesterol biosynthesis.	Liver
D21826	Cytidine monophospho-N-acetylneuraminic acid hydroxylase; the key enzyme for the synthesis of N-glycolylneuraminic acid (NeuGc)	Liver
U00932	Glutamine fructose-6-phosphate transaminase 1 (Gfpt1); rate-limiting enzyme in hexosamine synthesis	Liver
L39373	Mannoside acetyl glucosaminyl transferase 3 (Mgat3); transfers the bisecting GlcNAc to the core of complex, N-linked carbohydrates	Liver
X72959	N-acetyl transferase 3 (Nat3)	Liver and salivary glands
J00355	Alpha-amylase-1; glycogen digestion and mobilization	Liver, brain
J04947	Angiotensin converting enzyme (Ace); dipeptidyl carboxypeptidase that converts angiotensin I into the potent vasoconstrictor angiotensin II	Ubiquitous
L09105	Glucose phosphate isomerase (GPI); a housekeeping gene expressed in all tissues and organisms that utilize glycolysis and gluconeogenesis.	Ubiquitous
ET62525	Polyptide N-acetylgalactosaminyltransferase-T4 (polypeptide GalNAc transferase-T4; ppGalNTase-T4); fourth member of the mammalian UDP-GalNAc; Golgi-like localization; 4 GalNAc-transferase controls the initiation of mucin-type O-linked protein glycosylation	Ubiquitous
X14489	Thymidylate synthase (Tyns)	Ubiquitous (all proliferating cells)
U34071	Galactosidase, alpha (Gla); carbohydrate metabolism	Ubiquitous (most cases)

Cellular Component / cell adhesion / membrane components / extracellular matrix

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		Location	
GenBank	Description		
ET62381	K-cadherin/cadherin-6; present at external cell surface at cell-cell contact sites; calcium-dependent cell adhesion molecule	Brain (cerebral cortex in neonatal mice), thymocytes	
X95226	Dystrobravin (Dtn); formation and maintenance of mammalian neuromuscular junction	Brain (CNS)	
X07215	Proteolipid protein (Plp), main integral protein of myelin	Brain (CNS)	
ET61336	Nonmuscle myosin heavy chain IIB; cell motility	Brain (CNS)	
ET63017	Cadherin 8 (Cdh8); adhesion molecule	Brain (subdivision of early CNS) and thymus	
X57377	Myosin Va (Myo5a); cytoskeleton	CNS, cephalic ganglia, and spinal ganglia; Ild skeletal myosin heavy chain gene expressed in fat-storing cells (FSC, lipocytes, or Ito cells) of regenerating liver	
X66976	Procollagen, type VIII, alpha 1 (Col8a1); extracellular matrix: component of basal laminae	Epithelial, endothelial, and mesenchymal cells in newborn mouse tissue	
M91602	Myosin light chain, phosphorylatable, cardiac ventricles (MyIpc); contractile protein, cytoskeleton	Fat-storing cells (FSC, lipocytes, or Ito cells) of regenerating liver; muscle	
ET63188	Fibroblast activation protein; cell-surface glycoprotein; member of the serine protease family; expressed at sites of tissue remodelling	Fibroblasts	
M17376	Alpha-1-acid glycoprotein 1 (AGP-1); membrane protein	Liver	
U49185	Occludin (Ocln); occludin is a transmembrane protein located at tight junctions and is known to interact with other tight junction proteins	Liver	
L02918	Procollagen type V alpha 2	Liver	
V00830	Epidermal keratin subunit; intermediate filament protein; maintenance of epidermal cell shape and resistance to mechanical trauma	Liver (epithelial cells)	
X53176	Integrin alpha 4 (Itga4); cell adhesion	Lymphocytes	
X91043	Erythrocyte protein band 7.2 (Epb7.2); stomatin; involved in Na ⁺ /K ⁺ permeability of cells	Spleen, lung, testis, not reported in liver	
U69136	Cadherin 9 (Cdh9); calcium-binding membrane glycoprotein; cell adhesion molecule	Thymocytes	
X97227	CD53 antigen (Cd53); pan-leukocyte antigen; cell membrane glycoprotein	Thymocytes	

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
X75636	Iduronato-2-sulfatase (IdS); degrades heparin sulfate and dermatan sulfate in lysosomes; deficiency causes fatal lysosomal storage disorder, (the mucopolysaccharidosis type II (the glycosaminoglycans heparin sulfate and dermatan sulfate accumulate); part of proteoglycans which bind, help package and store secretory molecules; function in cell adhesion and basal lamina formation	Ubiquitous
X66402	Matrix metalloproteinase 3 (Mmp3); extracellular matrix-degrading metalloproteinase	Ubiquitous
U56734	Mannose receptor, C type 2 (Mrc2); cell adhesion; antigen presentation	Wide tissue distribution

<i>Cell surface receptor</i>		
D78175	Natriuretic peptide receptor 3 (Npr3); membrane protein; modulates availability of natriuretic peptides at target organs; activation of G protein-coupled signaling system;	Epithelial and endothelial cells; lung (smooth muscle cells), heart (aortic smooth muscle cells)
M81000	Gastrin releasing peptide receptor (Grpr); member of the G protein-coupled receptor family	Fibroblasts
M35684	Complement receptor 2 (Cr2)	Late pre-B cells
ET61559	Bradykinin B1 subtype receptor; G protein-coupled membrane bound; T-kininogen modulation during acute phase protein synthesis	Liver (ubiquitous)
M86441	Fibroblast growth factor receptor 2 (Fgfr2); membrane-spanning tyrosine kinase; activated by three members of the FGF family	Liver parenchymal cells and others
U57612	CD44 antigen (Cd44); receptor for hyaluronan; cell surface glycoprotein; hyaluronan clearance from the blood; lymphocyte homing and activation	liver, CNS, other
ET61693	Leptin receptor (OB-R); transmembrane receptor	Liver, Lung, muscle, brain; developing bone, mesenchyme

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
ET62920	CC Chemokine Receptor-4; integral membrane protein; G-protein coupled receptor; signals involve chemotaxis and calcium flux; directs cell movement in thymus; directs monocytes and lymphocytes to their target tissues	Thymus, T cells, and monocytes

Molecular Motors:

ET63395	Axonemal dynein heavy chain (mdhc1); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
ET63399	Axonemal dynein heavy chain (mdhc3); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
ET63402	Axonemal dynein heavy chain (mdhc6); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
ET63405	Axonemal dynein heavy chain (mdhc9); axonemal dyneins are molecular motors that drive the beating of cilia and flagella; heavy chains are main components of multisubunit motor ATPase complexes called dyneins	Brain, trachea, testis
ET62103	Nebulin; a family of giant myofibrillar proteins	

Serum Protein/Secreted Protein

208 known genes: 2-fold or greater in CR vs. Cont at old and young age

GenBank	Description	Location
V00743	Alpha fetoprotein (Afp); main component of mammalian fetal serum; synthesized by visceral endoderm of the yolk sac and by fetal liver; blood level decreases after birth; synthesis reactivated in liver tumors	Liver (fetal & adult)

Immune Cell Function / Primary Response Genes

M88242	prostaglandin-endoperoxide synthase 2 (Pigs2); putative mediator of inflammation; induced by growth factors and cytokines	Fibroblasts and monocytes
L38281	immunoresponsive gene 1(lrg1); activated by bacterial LPS treatment	Macrophages
U43384	Cytochrome b-245, beta polypeptide (Cybb); a flavocytochrome that mediates the transfer of electrons from NADPH to molecular oxygen in the respiratory burst oxidase	Phagocyte
Y08026	Immunity-associated protein, 38 kDa (Imap38)	Spleen
X15592	Cytotoxic T lymphocyte-associated protein 2 beta (Ctla2b); homologue of cysteine protease proregion;	T cells

Others

ET62336	DNA ligase III-beta; DNA ligase III exists as two distinct isoforms denoted alpha and beta	Alpha is expressed in most tissues; beta is expressed in testes and during spermatogenesis
X61449	nucleosome assembly protein 1-like 1	Brain; expression poorly characterized
L28819	Involucrin (Ivl); a glycine-, serine- and cysteine-rich protein expressed late in differentiation of granular layers in normal epidermis	Epidermis
X99251	Repetin (Rptn); calcium-binding; similar to intermediate filament-associated proteins profilaggrin and trichohyalin; expression during late epidermal differentiation	Epithelia of forestomach and tongue

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
ET61424	Protein-tyrosine phosphatase epsilon precursor; the protein tyrosine phosphatase epsilon (PTPepsilon) gene gives rise to two proteins: a transmembranal, receptor-like form and a cytoplasmic, non-receptor form	Hematopoietic tissues
U73915	Phosphate regulating neutral endopeptidases on the X chromosome (Phex); mineralization of extracellular matrix by osteoclasts	Kidney, bone
ET61364	Meprin beta subunit isoform (Mep-1beta); meprins are membrane-bound oligomeric metalloendopeptidases, contain alpha and/or beta subunit	Kidney, intestine, not reported in liver
U60330	Proteaseome 3 (Psm3); Ki antigen; cell proliferation; enhances generation of class I binding peptides;	Liver, neurons, broad tissue distribution
X16490	Plasminogen activator inhibitor, type II (Planh2); serine protease inhibitor; inactivates urokinase-type plasminogen activator and regulates degradation of the extracellular matrix; one form is cytoplasmic the other is translocated into the endoplasmic reticulum	Liver; bone-marrow, spleen, lung, thymus, skin
X58169	T-complex protein 10a (Tcpl0a); Tcpl-10 gene has been established as a molecular candidate for the T complex responder locus which plays a central role in the transmission ratio distortion phenotype expressed by males heterozygous for a T haplotype.	Male germ line
Z46299	Sperm autoantigenic protein 17 (Sp17); sperm specific protein; calmodulin binding protein	Mammalian testis; sperm-specific
M26940	Casein beta (Csnb); milk protein	Mammary glands
ET63259	Cea14 gene (carcinoembryonic antigen family members); unknown function; member of the immunoglobulin superfamily	Many cea genes expressed in fetal liver
ET63260	Cea15 gene (carcinoembryonic antigen family members); unknown function; member of the immunoglobulin superfamily	Many cea genes expressed in fetal liver

208 known genes: 2-fold or greater in CR vs. Cont at old and young age			Location
GenBank	Description	Many cea genes expressed in fetal liver	
ET63261	Cea16 gene (carcinoembryonic antigen family members); unknown function; member of the immunoglobulin superfamily		
M20567	Heat shock protein, 70 kDa 2 (Hsp70-2); not induced by heat shock; developmentally regulated in P60spermatogenic cells; critical role in spermatogenesis		Meiotic phase of spermatogenesis
X04405	Myoglobin (Mb); small globular heme protein; oxygen-carrying		Muscle
ET63205	Odorant binding protein 1b		Nasal epithelium.
ET63156	Disabled homolog 1 (Drosophila) (Dab1); adaptor molecule in neural development		neuronal and hematopoietic cells
ET62968	Odorant receptor 23 (OR23)		Olfactory and testicular cells
U96701	Serine protease inhibitor 15 (Spi15); regulator of extracellular proteolysis		Predominantly in testis
ET63408	Capping protein beta 3 subunit; a novel isoform of actin-binding protein; a component of the cytoskeletal calyx of the mammalian sperm head.		Spermiogenesis
ET62832	Perforator protein (PERF 15); a novel testicular protein; sequence similarities to a family of lipid binding proteins; major component of the rat sperm perinuclear theca.		Testis
238118	Synaptonemal complex protein 1 (Sycp1); pairing of chromosomes during meiosis		Testis
M19413	Tubulin alpha, related sequence 1 (Tuba-rs1)		Testis
Y08485	Synaptonemal complex protein 3 (Sycp3); part of the lateral element of the synaptonemal complex; a meiosis-specific protein structure essential for synapsis of homologous chromosomes		Testis; synaptonemal complex protein 1 is also expressed in embryonic ovary, adult brain and testis
X96737	Synaptoobrevin like 1 (Syb11); housekeeping gene; X-linked; inactivated on one X in every female cell, and also inactive on the Y of male cells		Ubiquitous
X92842	Surfeit gene 6 (Surf6); involved in a nucleolar ribosome maturation; housekeeping		ubiquitous (nucleolus)

208 known genes: 2-fold or greater in CR vs. Cont at old and young age		
GenBank	Description	Location
ET62791	WW domain binding protein 6; WW domain is a globular protein domain that is involved in mediating protein-protein interaction and that ultimately participates in various intracellular signaling events; WW domain mediates protein-protein interaction by bin	Uncharacterized
ET62978	Neosin/lark; RNA-binding protein; Drosophila homologue encodes an element of the clock output pathway regulating adult eclosion (circadian rhythm)	Uncharacterized, probably neuronal

*** APPENDIX H

142 known genes: 2-fold up in young CR vs young Control and unchanged in old CR vs old Control				notation
<i>t-test</i>	<i>ng t-test</i>	Bank	notype	
		Bank		
0.083	0.001	854	troglycan (Dag1); Dystrophin associated protein 1; acts as a receptor for element membrane components	cle, epithelial cells (liver and others)
0.010	0.000	664	rin A5 (Efna5); Eph-related receptor sine kinase ligand 7; LERK-7; AL-1; S; essential for proper axon guidance and graphic mapping	ryo visual system, CNS and peripheral nervous system
0.084	0.014	122	assium inwardly-rectifying channel, family J, member 6 (Kcnj6); G protein-coupled; play a role in resting potential and controlling excitability of the cell	rons
0.425	0.008	135 and 861	tin receptor (Lepr); Obr; leptin is a key light control hormone; mutation of the leptin pter causes obesity	r, ubiquitous, but not in thymus or pancreas
0.346	0.008	701	inoblastoma-like 1(p107) (Rb11); transcriptional cell cycle repression; tumor suppressor gene; binds to myc gene	hest in liver and heart embryo, lower in adult liver, CNS, iterating cells, heart, lung, kidney, intestine
0.117	0.000	5603	aete-scute complex homolog-like sophila) (Ascl1); helix-loop-helix protein transcriptional factor; controls a basic ration in development of neuronal enitors in distinct neural lineages	eloping CNS and peripheral nervous systems, in adult n only
0.124	0.007	4120	ivin receptor IIB (Acvr2b); receptor for vins, which play an important part in oderm induction	ryo, testis
0.374	0.005	546	-ribosylation-like 4 (Arl4); ADP-sylation factor like protein 4; involved in ation of transport vesicles; expressed in erentiating cells	pocytes, ubiquitous

0.856	0.027	478	binding protein 1 (Aebp1); transcriptional repressor with carboxypeptidase activity; no description during adipocyte differentiation or oblast calcification	leoblasts and adipose tissue
0.221	0.027	1705	alkaline phosphatase 3, intestine, not Mn-activating (Akp3); a membrane-bound phosphatase (IAP); catalyzing cleavage of alloenzyme nonspecifically from a variety of phosphate esters.	stomach, intestine, kidney
0.592	0.009	361 and 1891	amylase 2, pancreatic (Amy2); J00361; alpha-amylase-like gene; glycogen mobilization	pancreas, liver and many others
0.125	0.001	676	amyloid beta (A4) precursor protein-binding, family A, member 2 (Apha2); X11 protein; X11 protein binds amyloid precursor protein; receptor trafficking; may regulate the processing of amyloid precursor protein to the amyloid beta peptide	neurons
0.071	0.006	216	lipoprotein CII (Apoc2); required for hydrolysis of triglycerides by lipoprotein lipase	liver, adult liver, intestine and peritoneal macrophages
0.371	0.006	573	neurotrophic factor (Bdnf); promotes development and maintenance of the nervous system	brain, highest in hippocampus and cerebral cortex
0.062	0.004	740	casein delta (Csd); epsilon-casein (milk)	mammary glands
0.324	0.016	526	8 antigen (Cd48); BCM-1; Blast-1; mediates cell adhesion	surface of leukocytes
0.796	0.024	562	division cycle 25 homolog C (Scp2); cyclin (Cdc25c); encodes nine/tyrosine phosphatases that activate cyclin-dependent kinases; control of cell division	in spleen and thymus

0.101	0.039	715	ular retinoic acid binding protein 1; intracellular lipid binding protein a high affinity for retinoic acid	ely expressed during development also in thymus
0.051	0.006	690	omobox homolog 1 (Drosophila HP1 beta x1); Homologous to Drosophila HP1 gene; it's chromatin, rendering heritable changes gene expression; activates or silences es	quitous during development
0.541	0.002	032	lin B2 (Ccnb2); regulator of transitions between phases of cell division	hest in pachytene spermatocytes, also in early ryogenesis
0.343	0.002	771	ochrome c, testis (Cyc1); maintains testis spermatogenesis	is
0.110	0.016	859	D (aspartate-glutamate-alanine-aspartate) polypeptide 4 (Ddx4); DNA helicase; portant role in determination events of cells	ryonic gonads and testicular germ cells
0.059	0.034	3226	ensin related sequence cryptdin peptide (eth cells) (Defcr-rs1); CRS1C; microbial peptide	eth cells of the small intestine; smooth muscle
0.044	0.031	903	a-like 1 homolog (Drosophila) (Dl1); cell-cell communication regulating the rmination of various cell fates during elopment	ryo, not in adult liver
0.167	0.038	986	moscollin 1 (Dsc1); a "skin-type" mosomal cadherin; formation of tinized epithelial structure during mouse elopment; cell to cell adhesion	ryo and skin
0.475	0.002	963	hanous homolog 1 (Drosophila) (Diap1); in regulation of cell morphology, adhesion, cytokinesis; Rho regulates actin merization by targeting profilin via the hanous homolog 1 beneath specific ma membranes	oblasts (ubiquitous)
0.174	0.027	925	transcription factor 5 (E2f5); M.musculus mRNA for E2F-5 protein.	
0.899	0.000	328	-like module containing, mucin-like, hormone receptor-like sequence 1 (Emr1); M.musculus mRNA for O.	
0.177	0.010	2930	hropoietin (Epo); M12930 Mouse erythropoietin gene, complete cds	

0.143	0.023	325	ogenital dysplasia homolog (Fgd1); U22325 Mus musculus faciogenital dysplasia (Fgd1) mRNA, plate cds
0.993	0.047	1737	specific gene 27 (Fsp27); M61737 M.musculus adipocyte-specific mRNA, partial cds
0.062	0.046	635	oblast growth factor 9 (Fgf9); U33535 Mus musculus fibroblast growth factor 9 (FGF-9) mRNA, plate cds
0.993	0.003	853	lir1 (Fbin1); M.musculus isolate Mk24) mRNA for the 3' end of MB-90/fibulin C form.
0.358	0.006	854	lin1 (Fbin1); M.musculus isolate Mk31) mRNA for MB-90/fibulin D form.
0.150	0.002	099	junction membrane channel protein beta 3 (Gjb3); connexin31.
0.341	0.000	953	olin (Gsn); J04953 Mouse gelsolin gene, complete cds
0.956	0.001	265	osaminy (N-acetyl) transferase 1, core 2 (Gcnt1); U19265 Mus musculus core2-GlcNAc-transferase -GnT) mRNA, complete cds
0.374	0.008	998	th factor receptor bound protein 10 (Grb10); U18996 Mus musculus growth factor receptor-binding ein (Grb10) gene, complete cds
0.146	0.041	0422	one 4 protein (Hox4); J00422 Mouse histone H4 gene, complete cds
0.724	0.000	071	eo box C5 (Hoxc5); U28071 Mus musculus homeobox protein (Hoxc-5) gene, complete cds
0.207	0.037	519	roxysteroid dehydrogenase-5, delta <5>-3-beta (Hsd3b5); Mus musculus 3-ketosteroid reductase D3b5) mRNA, complete cds
0.116	0.003	973	rferon alpha family, gene 4 (Ifna4); X01973 Mouse gene for interferon alpha 4 (Mu IFN-alpha 4).
0.095	0.007	599	rferon gamma receptor 2 (Ifngr2); U69599 Mus musculus interferon gamma receptor second chain r2) gene
0.008	0.015	542	leukin 6 (Il6);
0.566	0.008	359	359 mouse alpha-amylase-2 gene
0.086	0.009	761	oncogene (Jun); Mouse mRNA for protein homologous to human c-JUN.
0.785	0.046	08574	voltage-gated channel, subfamily S, 2 (Kcns2)Mus musculus potassium channel alpha subunit 9.2) mRNA, complete cds.
0.128	0.018	193	tin complex 1, acidic, gene 10 (Krt1-10); L00193 Mouse epidermal keratin type I intermediate ent gene
0.053	0.026	313	tin complex 1, acidic, gene 15 (Krt1-15); cytoskeletal structural protein D16313 Mouse cyokeratin gene, complete cds
0.071	0.002	889	r cell lectin-like receptor, subfamily A, member 8 (Kira8); U12889 Mus musculus Ly49H mRNA, plate cds
0.763	0.002	4398	rin (Lori); M34398 Mouse loririn mRNA, complete cds
0.088	0.016	503	phoid enhancer binding factor 1 (Lef1); D16503 Mouse mRNA for LEF-15, complete cds
0.079	0.001	3099	usculus epidymal sperm gene.
0.701	0.026	3121	usculus mRNA for alpha tectorin.
0.016	0.019	3404	usculus mRNA for axonemal dynein heavy chain (partial, ID mdhc8).
0.145	0.003	3397	usculus mRNA for cytoplasmic dynein heavy chain (partial, ID mdhc11).

0.591	0.000	3151	usculus mRNA for neural cell adhesion molecule.	
0.119	0.047	3209	usculus mRNA for Nkx2-3 gene.	
0.225	0.040	3083	usculus PR264 gene.	
0.208	0.034	595	gen activated protein kinase kinase kinase 2 (Map4k2); U50595 Mus musculus Rab8- tracting protein mRNA, complete cds	
0.139	0.000	3431	se DNA for neurotrophic factor, exon 3 and complete cds.	
0.044	0.039	3429	se DNA for vav-T, partial cds.	
0.392	0.032	997	se mRNA for cytotoxic T-cell membrane glycoprotein Ly-3 3'flank.	
0.153	0.028	1015	se NLRR-2 mRNA for leucine-rich-repeat protein, partial cds.	
0.427	0.015	210	musculus (Notch2) mRNA, complete	
0.000	0.034	2373	musculus ACF7 neural isoform 1 (mACF7) mRNA, partial cds.	
0.066	0.000	3257	musculus cea12 gene.	
0.087	0.028	3255	musculus cea9 gene.	
0.302	0.034	1200	musculus complement receptor (CRY) mRNA, partial cds (spleen-specific).	
0.170	0.000	1528	musculus CRE-BP1 transcription factor, novel spliced form, mRNA, partial cds.	
0.189	0.043	2694	musculus glucose-6-phosphate dehydrogenase (G6PD) gene, nuclear gene encoding mitochondrial ein, exon 6 and partial cds.	
0.374	0.000	1692	musculus implantin mRNA, partial cds.	
0.142	0.018	2692	musculus laminin alpha 3B chain (Lama3B) mRNA, partial cds.	
0.346	0.005	2477	musculus mena protein (Mena) mRNA, complete cds.	
0.155	0.000	1218	musculus microtubule-associated protein 4 (MAP4) mRNA, partial cds.	
0.075	0.001	1544	musculus P-glycoprotein (mdr2) gene, partial cds.	
0.084	0.040	2235	musculus polyreactive autoantibody, immunoglobulin IgM heavy chain mRNA, partial cds.	
0.074	0.001	1683	musculus potassium channel mkv3.2 mRNA, partial cds.	
0.043	0.019	1621	musculus putative protein kinase MIRK2 mRNA, partial cds.	
0.110	0.026	1556	musculus rearranged T cell receptor (TCRV-alpha-2.1) mRNA, variable region, partial cds.	
0.191	0.026	2586	musculus sodium channel 2 (mBNaC2) mRNA, partial cds.	
0.104	0.033	2280	musculus T cell receptor V alpha mRNA, partial cds.	
0.459	0.003	1439	musculus trp-related protein 2 mRNA, partial cds.	
0.061	0.002	1441	musculus trp-related protein 5 mRNA, partial cds.	
0.054	0.004	0474	istoylated alanine rich protein kinase C substrate (Macs); M60474 Mouse myristoylated alanine-rich kinase substrate (
			RCKS) mRNA, complete cds	
0.378	0.017	360	plastic progression 1 (Npn1); M.musculus (Balb/C) PLO1 mRNA.	
0.153	0.000	919	roblastoma myc-related oncogene 1 (Nmyc1); Mouse N-myc gene.	

0.827	0.049	819	ropeptide Y receptor Y1 (Npy1r); D63819 Mouse mRNA for neuropeptide Y-Y1 receptor, complete cds
0.186	0.000	0514	al (Nodal); X70514 M. musculus nodal gene, a TGF-beta-like gene
0.133	0.046	163	gin (Nog);
0.238	0.029	033	lear protein 220 (Np220); Mouse mRNA for nuclear protein, NP220, complete cds
0.062	0.000	804	rially expressed gene 3 (Peg3); U48804 Mus musculus Zn-finger protein Pw1 gene, complete cds
0.348	0.030	687	nylathanolamine-N-methyltransferase (Pnmt); L12687 Mouse phenylethanolamine N-methyltransferase gene, complete cds
0.307	0.005	279	sphatidylinositol 3-kinase, catalytic, alpha polypeptide (Pik3ca); U03279 Mus musculus Balb/c sphatidylinositol 3-kinase 110 kDa subunit mRNA, complete cds
0.233	0.046	277	spholipase A2 group VII (platelet-activating factor acetylhydrolase, plasma) (Pla2g7); U34277 Mus culus PAF acetylhydrolase mRNA, complete cds
0.408	0.000	305	ssium voltage gated channel, shaker related subfamily, member 1 (Kcna1); Mouse MBK1 mRNA for se brain potassium channel protein-1.
0.958	0.038	789	iferation-associated protein 1 (Pifap); M.musculus mRNA for p38-2G4.
0.063	0.000	594	iferin related protein (Plfr); Mouse mRNA for proliferin-related protein (PRP).
0.146	0.009	532	ein kinase C, beta (Pkcbl); Mouse mRNA for protein kinase C beta-II.
0.109	0.009	242	ein kinase C, eta (Pkcbl); D90242 Mouse mRNA for nPKC-eta
0.188	0.047	577	ein kinase C, lambda (Pklcl); Mouse mRNA for protein kinase C lambda
0.196	0.049	935	ein kinase, cAMP dependent regulatory, type II alpha (Prkar2a); J02935 Mouse cAMP-dependent ein kinase type II regulatory subunit mRNA, 3' end
0.542	0.011	720	ein that interacts with C kinase 1 (Pick1); M.musculus mRNA for perinuclear binding protein.
0.374	0.013	768	eoglycan 2, bone marrow (Prg2); L46768 Mus musculus major basic protein (MBP-1) gene, complete cds
0.256	0.013	133	eoglycan, secretory granule (Prg); Mouse mRNA for mastocytoma proteoglycan core protein, lycin.
0.904	0.022	239	5B, member RAS oncogene family (Rab5b); X84239 M.musculus mRNA for rab5b protein
0.010	0.027	247	-related C3 botulinum substrate 2 (Rac2); M.musculus EN-7 mRNA.
0.115	0.034	711	ication factor C, 140 kDa (Reccl); M.musculus mRNA for replication factor C, large subunit.
0.463	0.023	642	finger protein (C3HC4 type) 19 (Rnf19)X71642 M.musculus GEG-154 mRNA
0.694	0.021	5732	inal vesicle protein 2 (Svp2); Mouse seminal vesicle secretory protein IV (SVS IV) mRNA, 3' end
0.714	0.032	7790	m amyloid A pseudogene (Saa-ps); M17790 Mouse SAA4 gene encoding serum amyloid A, exons 3-4
0.009	0.021	580	en in absentia 1B (Siah1b); M.musculus siah-1B protein mRNA.
0.103	0.021	687	ium channel, voltage-gated, type I, beta polypeptide: (Scn1b); L48687 Mus musculus voltage-dependent Na+ channel beta-1 subunit gene, exons 4-6
0.328	0.002	268	te carrier family 35 (CMP-sialic acid transporter), member 1 (Slc35a1); M.musculus mRNA for CMP-sialic acid transporter.

0.114	0.037	287	ulated by retinoic acid gene 8 (Stra8); M.musculus mRNA for Stra8 protein.
0.043	0.007	749	interacting factor (Tgfr); X89749 M.musculus mRNA for mTGF protein
0.394	0.002	6987	scription factor CP2 (Tcfcp2); Mouse alpha-globin transcription factor CP2 mRNA sequence
0.177	0.034	362	
0.402	0.007	162	of necrosis factor receptor superfamily, member 18
0.533	0.004	534	of necrosis factor receptor superfamily, member 18
			ly related protein precursor, mRNA, complete cds.
0.306	0.013	581	utin-activating enzyme E1, Chr X (Ube1x); ubiquitin-dependent protein degradation
0.438	0.006	859	
0.172	0.005	361	oncogene (Vav); X64361 M.musculus vav mRNA
0.170	0.048	01598	icular inhibitory amino acid transporter (Viat);
0.008	0.019	438	entin (Vim);
0.124	0.047	434	
0.495	0.007	9797	gless-related MMTV integration site 4 (Wnt4); M89797 Mouse Wnt-4 mRNA, complete cds
0.056	0.031	496	496 Murine H3.1 gene for histone H3.1
0.567	0.070	174	finger protein 30 (Zfp30); Z30174 M.domesticus (C57Bl/6J) mRNA for zinc finger protein 30

APPENDIX I

known genes: 2-fold up in old CR vs. old Control and unchanged in young CR vs. young Control												ue distribution		
R	R	R	R	ont	ont	st	ngCR	ngCR	ngCont	ngCont	ntype			
1	2	3	7	8	9		16	17	18	19	20	21		
602	8.75	11.48	3.04	0.00	0.00	0.003	0.00	0.00	29.61	0.00	0.00	0.00 .374	e morphogenetic tein 2 (Bmp2); is mponent of a e-derived extract s (these cells ical to initiation of uded ation of cartilageoblasts, its conversion bone; is cturally related ransforming with facto-beta s, vins, and bins. BMP aling is essential development of letogenic and rogenic cranial ral crest.	oblastic cells; ur types of -hematopoietic s (these cells of uded tinocytes. ocytes. kidney helial cells.and or cells of e, muscle. liver, kidney, ach, colon. ronal tissue)
3463	2.96	1.91	0.92	0.00	0.00	0.031	2.38	1.43	1.49	1.08	0.62	0.00 .052	YDROXYACYLSPHINGOSINE 1- A-GALACTOSYLTRANSFERASE CURSOR (EC 2.4.1.45) (UDP- LACTOSE-CERAMIDE LACTOSYLTRANSFERASE) RAMIDE UDP- LACTOSYLTRANSFERASE) REBROSIDE SYNTH	
2773	1.04	0.96	1.92	0.16	0.00	0.016	1.99	2.96	1.05	0.00	0.00	1.77 .155	HHRIN-A3 (EPH-RELATED EPTOR TYROSINE KINASE AND 3) (LERK-3) (EHK1 LIGAND) K1-L) (FRAGMENT).	

1172	2.83	10.69	9.99	0.00	0.00	0.00	0.000	8.70	0.00	2.72	1.52	0.00	0.00	0.00	0.347	CYTOKINE RECEPTOR CURSOR (EC 2.7.1.112) ROSINE-PROTEIN KINASE EPTOR FLK-2) (FETAL LIVER ASE 2) (TYROSINE-PROTEIN ASE FLT3).
2049	2.43	10.05	8.49	0.00	0.00	0.00	0.040	3.04	55.00	0.00	0.00	0.00	0.00	0.00	0.243	MEOBOX TEIN HOX-D3 X-4.1) (MH-19).
971	3.57	30.24	5.17	0.00	0.00	0.00	0.031	1.19	0.00	2.87	0.00	0.00	18.88	598	ptor protein plex AP-2, alpha bunit (Ap2a1); gl-plasma brane transport icle; intracellular tein traffic; lates protein ing in the ocytic and late retory pathways	uitou
940	9.37	62.71	0.48	0.00	0.00	0.00	0.020	4.54	47.82	0.00	0.00	0.00	12.28	445	aragine thetase (Asns); scription is ced by amino and ohydrate rivation	r
0903	2.38	2.80	1.39	0.00	0.52	0.00	0.071	0.00	0.51	0.61	1.61	2.13	2.56	007	mphoid kinase); a member of family of tooncogenes; brane- ociated protein sine kinase; ction in B- phocyte specific duction hway	ressed cifically in cells he B-lineage, in e pro-B cells in most pre B mature B cells, not in plasma s.

019	1.31	0.96	1.29	0.00	0.56	0.58	0.022	1.04	0.87	1.44	1.13	0.72	1.25 .726	igin (Bsgl); O19 Mouse gene basigin precursor, igin signal ursor roid gland uitou
991	0.78	1.33	1.43	0.34	0.58	0.37	0.025	1.12	1.84	1.91	0.00	0.88	1.83 .289	itonin (Calc)
343	5.03	16.01	1.89	0.00	0.00	0.00	0.001	0.00	0.00	27.69	0.00	0.00	0.00 .374	ium channel beta bunit (Cacnb2); tage-sensitive ium channels are ely expressed plexes which e both trogenic and al transduction ctions. uitou
966	2.24	2.14	1.72	0.83	1.05	0.52	0.005	0.80	1.47	0.95	0.88	0.80	2.05 .725	onyl reductase 1 r1);a cytosolic ber of the aldo- reductase group nzymes. uitous enzyme abolize a variety ompounds taining carbonyl ups.

079 0.83 1.18 1.02 0.54 0.51 0.33 0.010 1.38 0.98 1.19 0.69 1.71 1.17 .994 dermal-neural
ex 1 9 (Enc1); an
y and highly
cific marker of
ral induction in
ebrates; encodes
lch family related
tein that is ; ENC-
nctions as an
n-binding protein
t may be
ortant in the
anization of the
n cytoskeleton
ing neural fate
cification and
elopment of the

320 8.37 14.30 8.47 0.00 0.00 0.00 0.046 0.00 0.00 0.00 7.15 0.00 0.00 .374 structure
cific
onuclease 1
1); a structure-
cific
onuclease,
r, endoderm-
head box A2
ved tissues.
a2); transcription
, stomach, air
or
II intestine.
1.04 .595 eral transcription
or lIH,
peptide 1 (62kD
unit) (Gtl2h1);
0.00 .141-Kruppel family member GLI2
2); 222703 M.musculus
tinocyte growth factor Fgf-7

255	1.25	1.99	2.59	0.00	0.59	0.00	0.016	1.44	0.75	1.26	0.00	1.27	0.00	0.197	Kruppel family ber GLI3 musculus mRNA Gli3 protein.
498	1.47	1.76	1.46	0.70	0.87	0.66	0.002	0.74	1.04	0.96	0.91	1.30	1.53	0.178	amate cysteine se (gamma- amylcysteine thetase), catalytic lc);
498	5.92	22.45	4.96	0.00	0.00	0.00	0.039	5.05	1.71	28.66	0.00	0.00	0.00	0.236	amate receptor, tropic, AMPA2 ha 2) (Gria2);
754	9.29	15.43	1.98	0.00	0.00	0.00	0.002	7.98	18.64	0.00	0.00	0.00	0.00	0.176	t shock factor 2 f2)M.musculus NA for heat shock scription factor 2.
0365	2.12	2.48	2.79	0.00	1.29	0.00	0.013	2.69	0.91	0.37	1.09	0.00	0.00	0.297	tion plakoglobin (Jup); one of the teins of desmosomal membranes storage site plaques of the helium, and is also accompanant of ues of the adherins junction
239	5.76	13.54	7.04	0.00	0.00	0.00	0.022	2.55	0.00	26.67	0.00	0.00	0.00	0.316	usculus mRNA goosecoid eobox.
778	1.17	17.10	8.21	0.00	0.00	13.02	0.032	9.71	2.14	0.00	0.00	0.00	0.00	0.251	usculus H2B e.
889	0.94	1.46	1.95	0.65	0.00	0.55	0.041	1.42	1.73	0.91	0.70	2.19	1.06	0.950	usculus mRNA wnt-8D protein.
796	6.71	6.58	0.91	0.00	0.00	0.00	0.046	3.72	13.92	38.64	0.00	0.00	0.00	0.056	usculus mRNA ologous to S. visiae RAD54.
942	4.93	4.23	1.66	0.55	0.00	1.26	0.047	4.85	0.74	4.66	0.00	0.68	0.44	0.088	usculus mRNA nhancer-trap- s 1.
060	3.39	1.14	1.66	0.18	0.00	0.00	0.043	0.86	2.53	2.91	8.19	0.00	0.00	0.834	usculus myf-6 e.

2974	2.34	1.55	1.44	0.00	0.00	0.00	0.003	1.35	1.03	2.14	0.97	0.69	0.00.096	usculus SOX1 e. JIR: S10950 -determining tein - mouse gment)
3453	6.48	30.32	7.19	0.00	0.00	0.00	0.009	9.94	4.23	2.36	0.00	0.00	0.00.273	3453 Mouse somal protein ' (rPL32') gene, plete cds
885	1.34	1.23	2.44	0.20	0.84	0.00	0.046	0.00	0.00	5.53	2.69	1.16	0.00.794	toctoma N-deacetylase/N- otransferase (Mndns); usculus mRNA for glucosaminyl eacetylase / N-sulfotransferase.
461	2.63	1.67	1.27	0.40	0.00	0.00	0.015	1.26	1.84	0.81	0.00	1.19	0.00.144	rine Hox2.2 NA for a eobox protein.
1617	1.41	1.14	1.53	0.86	0.25	0.57	0.019	1.18	1.72	1.38	0.76	0.71	0.73.012	s musculus SE6 6/Ly-49C) mRNA, plete cds.
2456	1.22	9.34	6.07	0.00	0.00	0.00	0.036	3.70	0.00	0.00	4.26	0.00	0.00.420	s musculus in-2 mRNA, ial cds.
2752	1.25	1.27	0.96	0.71	0.28	0.75	0.032	1.26	1.14	1.18	0.81	0.55	1.04.053	s musculus tocyst unknown tein mRNA, partial
3262	0.84	1.16	1.18	0.65	0.00	0.19	0.025	1.32	1.29	1.36	1.27	0.04	0.73.143	s musculus cea17 e.
2465	1.51	1.15	0.99	0.48	0.00	0.66	0.029	1.82	1.34	1.01	0.68	0.79	2.48.913	s musculus erbB2 NA, partial cds.
737	1.13	0.87	1.16	0.00	0.76	0.00	0.041	1.26	1.33	0.00	1.41	1.27	0.80.557	s musculus ne/threonine- tein kinase 4m (PRP4m) NA, complete cds

889	1.50	1.60	1.40	0.55	0.83	0.51	0.002	1.02	1.14	1.01	0.99	0.47	0.88	0.168s musculus SH3- taining protein P3 mRNA, partial
620	1.83	9.81	3.90	0.00	0.00	0.09	0.023	1.48	0.52	0.00	8.09	0.00	14.09	0.177s musculus I/SNF complex 60 subunit (BAF60
2078	0.90	1.03	1.23	0.37	0.18	0.80	0.043	1.21	1.47	1.09	0.62	1.64	0.97	0.607s musculus scription factor 4 (tbx4) mRNA, ial cds.
283	2.27	0.80	1.93	0.11	0.45	0.52	0.048	1.15	0.85	0.31	1.49	1.99	3.51	0.076s musculus scription factor 2 (USF2) gene
247	1.20	13.60	8.56	0.00	0.00	0.00	0.001	2.78	19.06	0.00	0.00	0.00	30.03	0.826s musculus zinc er protein (kid-1) e, complete cds.
128	3.25	3.67	2.03	0.00	0.00	1.82	0.038	0.00	0.00	0.00	0.18	3.26	6.55	0.144 assium voltage-gated channel, family H (eag-related), member 2 nh2); Mus musculus ether-a-go- related protein isoform Merg 1a rg1) mRNA, complete cds.
3227	1.35	1.40	1.47	0.60	1.05	0.22	0.031	0.70	0.95	0.63	0.61	1.78	1.91	0.189 roenkephalin 2 k2);a homolog of brain roenkephalin, a rotransmitter
2136	2.63	30.79	0.41	0.00	0.00	0.00	0.001	0.00	51.41	43.25	0.00	0.00	0.00	0.179 collagen, type IX, alpha ol9a1); a fibrillar collagen, the ely distributed elements of the acellular matrix.
405	1.12	1.22	1.32	0.00	0.88	0.06	0.036	1.52	0.30	2.07	0.00	0.00	2.18	0.558 collagen, type VI, a 1 (Col6a1);
320	1.15	1.31	1.26	0.00	0.44	0.61	0.009	1.20	1.30	1.06	0.00	0.39	0.94	0.057 kinje cell protein 4 n 4);

-159-

960 1.87 1.22 0.84 0.00 0.00 0.14 0.015 1.03 0.00 1.18 3.37 3.78 0.97.107 sine kinase
ptor-1 (Tie1);
usculus mRNA

TIE receptor
sine kinase.

297 0.99 1.46 1.35 0.00 0.00 0.00 0.001 1.26 1.32 1.01 0.59 0.14 1.06.100 297 Mus
culus

chrome B561
yt) mRNA,

plete cds

399 6.64 22.65 5.57 0.00 0.00 0.00 0.001 4.45 42.28 9.23 0.00 0.00 0.00.099 399 Mus
culus Cdk-

bitor p57KIP2
2) mRNA,

plete cds

788 1.60 1.19 2.04 0.00 0.00 0.00 0.003 1.25 0.92 1.93 0.35 0.00 1.08.111 788 Human
ative

cytochrome c-
e synthetase

NA, complete cds

818 1.30 1.21 0.93 0.79 0.09 0.52 0.043 1.07 0.68 0.51 1.45 2.13 1.88.014 818 Mus
culus tuberin

C2) mRNA,

plete cds

925 1.35 1.33 0.87 0.43 0.50 0.50 0.012 0.13 1.13 1.49 1.27 1.83 0.00.871 925 Mus
culus

scription factor

mRNA, complete

085 1.43 1.51 0.76 0.00 0.00 0.47 0.020 1.40 1.24 1.56 0.00 0.00 8.39.645 085 Mus
culus thiazide-

sitive Na-CI

ransporter mRNA,

plete cds

673 2.43 25.66 2.46 2.34 0.00 0.00 0.028 6.97 0.00 0.00 0.00 0.00 215.85.460 673 Mus musculus histone
(A)-613, histone H2a(B)-613, and

one H2b-613 (H2b) genes,

plete cds

849	2.21	2.41	1.17	1.06	0.00	0.00	0.039	1.76	0.58	0.94	0.80	0.29	2.39 .928	849 Mouse kFGF genomic
998	1.75	1.67	1.29	1.03	0.65	0.36	0.022	0.83	1.38	1.51	0.24	0.00	0.97 .080	998 M.musculus for gamma 2c
438	1.25	1.54	1.20	0.00	0.00	0.00	0.000	0.80	3.02	1.36	0.15	0.00	1.56 .236	438 Mouse MP4 e for a proline-protein
398	8.81	54.55	5.19	0.00	0.00	0.00	0.007	9.14	12.37	4.19	0.00	0.00	0.00 .051	398 Mouse Flt3 NA for tyrosine se receptor of PDGF
091	1.09	1.23	1.06	0.54	0.00	0.67	0.027	1.00	1.19	1.05	0.41	0.00	1.00 .106	091 M.musculus mRNA
719	1.51	1.33	1.41	0.00	0.00	0.13	0.000	1.25	0.84	1.19	1.16	0.00	0.27 .177	719 Mus culus CREB gene cAMP-responsive-ent binding tein, exon 2
904	1.21	2.04	1.39	0.00	0.95	0.00	0.039	1.97	3.00	1.04	0.00	0.07	0.82 .052	904 M.musculus A5T mRNA for T receptor alpha in
850	2.50	1.83	1.79	0.00	0.00	0.00	0.001	0.00	8.14	0.52	0.00	1.48	6.28 .931	850 M. culus mRNA for P kinase-vated protein se 2
104	7.34	15.22	7.66	0.00	0.00	0.00	0.029	6.59	11.41	0.00	0.00	0.00	0.00 .175	104 M.musculus NA for gli2 gene
677	3.74	25.02	4.42	0.00	0.00	0.00	0.008	0.00	79.97	0.00	0.00	0.00	0.00 .374	aguchi sarcoma l (v-yes) ogene homolog sl:
509	1.18	2.10	1.25	0.46	0.00	0.72	0.037	1.18	1.23	2.33	0.72	0.00	0.82 .079	509 Mouse NA for PAP ologous protein

544	0.96	1.28	1.67	0.83	0.21	0.34	0.039	0.54	1.04	1.14	1.25	0.19	1.20	use mRNA for ase small unit, complete
801	1.99	1.90	1.93	0.00	0.00	0.00	0.000	1.41	2.04	0.59	0.00	0.00	2.64	801 Mouse NA for Emb, plete cds
095	1.34	1.23	1.43	0.52	0.14	0.15	0.002	1.00	2.10	1.00	0.85	1.25	0.90	095 Mouse DNA histamine H1 ptor, complete
471	5.32	27.16	8.38	0.00	0.00	0.00	0.027	2.16	27.48	17.72	0.00	0.00	0.00	471 House se; Musculus esticus testis NA for gsg3, plete cds
900	1.35	1.66	1.86	0.06	0.00	1.18	0.043	0.63	1.81	0.82	0.00	1.39	0.00	900 House se; Musculus esticus male n mRNA for 3, complete cds
146	6.21	18.86	8.67	0.00	0.16	0.00	0.000	6.27	25.66	1.84	0.00	0.00	0.08	146 Mouse 9d gene
1090	5.84	5.50	7.16	0.00	0.00	0.00	0.000	2.92	14.39	7.89	0.00	0.00	0.00	use DNA for odine receptor e-3, exon 2, ial cds.
1642	1.28	1.60	1.43	0.25	0.00	0.00	0.000	1.73	1.46	0.94	1.06	0.00	0.31	ROTEIN-ACTIVATED INWARD TIFIER POTASSIUM CHANNEL 2 K2) (POTASSIUM CHANNEL, ARDLY RECTIFYING, SUBFAMILY EMBER 6) (KIR3.2).

1677	3.66	3.39	4.44	0.00	0.00	0.00	0.000	2.77	2.79	0.93	0.00	0.00	1.07	.065	ILORIDE-SENSITIVE SODIUM NNEL ALPHA-SUBUNIT (LUNG CHANNEL ALPHA SUBUNIT) PHA ENAC) (NONVOLTAGE- TED SODIUM CHANNEL 1 ALPHA/ UNIT) (SCNEA) (ALPHA NAC11) AGMENT).
2211	1.51	1.55	1.09	0.84	0.47	0.24	0.019	1.42	0.91	1.32	0.29	0.45	1.09	.704s musculus ant formin (Fmn) e, partial cds.	
2229	1.20	1.67	1.04	0.00	0.00	0.00	0.002	1.23	1.68	1.36	0.55	0.96	0.94	.037s musculus t10b mRNA, plete cds.	
2444	2.44	1.02	0.98	0.00	0.00	0.00	0.037	1.41	1.71	2.08	0.00	1.14	0.94	.060s musculus Sox4 x4) mRNA, partial	
2446	9.81	28.01	8.98	0.00	0.00	0.00	0.000	9.16	15.36	0.29	0.00	0.00	0.00	.782s musculus Sox12 x12) mRNA, ial cds.	
2570	1.20	1.21	1.81	0.60	0.00	0.40	0.016	0.80	2.67	3.46	0.00	0.23	1.22	.105s musculus Mad olog Smad5 NA, complete	
2673	1.24	1.58	1.28	0.35	0.93	0.00	0.033	1.74	0.41	0.70	1.76	1.07	0.26	.900use hyaluronan thase 3 mRNA, plete cds.	
2998	0.93	1.07	1.36	0.07	0.00	0.00	0.001	1.19	1.08	1.34	0.51	0.01	1.21	.153 usculus mRNA dystrobrein ne m32).	
3005	1.98	1.19	0.81	0.00	0.00	0.00	0.018	0.00	2.97	1.35	3.07	5.28	0.00	.487 usculus mRNA phospholipase C ma 1.	
3019	0.61	1.69	1.47	0.00	0.39	0.00	0.033	1.39	1.55	1.93	0.00	1.43	0.00	.086 usculus skeletal cle ryanodine ptor gene.	
3122	1.10	1.77	1.18	0.62	0.51	0.52	0.021	0.84	1.19	1.52	1.33	0.74	0.90	.515 usculus mRNA beta tectorin.	

3226	1.13	1.26	1.06	0.59	0.30	0.64	0.006	1.02	0.98	1.05	0.47	0.79	1.15	.337	usculus htlf e, exon.
3241	1.07	1.17	0.98	0.51	0.45	0.39	0.007	1.69	1.02	1.23	0.52	0.63	1.60	.370	OPAIN PRECURSOR (EC 3.4.22.-) STEINE PROTEASE CPP32) MA PROTEIN) (CASPASE-3) El.
3410	1.13	1.60	1.69	0.36	0.58	0.00	0.009	1.05	1.19	1.25	0.04	0.95	0.46	.065	usculus mRNA samaphorin Hv 88 bp).
3528	1.25	1.34	1.14	0.43	0.17	0.18	0.007	1.00	1.11	1.00	0.29	0.00	1.19	.207	s musculus A- protein (A-myb) e, partial cds.
293	8.72	10.87	2.41	0.00	0.00	0.00	0.007	0.00	2.18	0.00	8.26	2.35	0.00	.335	use skeletal cle sphorylase, gamma unit mRNA, plate cds
298	1.25	1.49	1.34	0.00	0.76	0.89	0.046	1.64	1.08	1.06	0.94	0.80	0.36	.095	298 Mouse rine otransferrin NA
060	6.51	7.40	5.77	2.15	0.00	0.00	0.002	3.72	7.47	0.00	0.00	0.00	0.00	.159	060 Mouse somal protein, e 3A coding for
785	1.75	0.96	1.61	0.73	0.26	0.00	0.027	2.30	1.04	1.75	0.65	1.40	0.00	.138	use mRNA cad by PDGF h some homology -fos.
928	2.01	3.91	3.04	0.00	1.45	0.00	0.027	5.18	0.00	0.00	1.79	0.55	0.23	.654	s musculus erentiation igen (CD22) NA, complete
472	1.38	1.81	1.41	0.00	0.52	0.00	0.004	1.84	0.70	1.23	1.50	0.35	0.77	.458	472 Mouse Box a mRNA, plete cds

167	1.05	1.39	1.67	0.51	0.00	0.00	0.008	1.89	0.95	1.43	0.00	1.86	0.00	0.299	167 Mouse zinc er protein mRNA
580	2.58	18.21	9.09	0.00	0.00	0.00	0.004	7.22	42.38	12.47	0.00	0.00	0.00	0.132	580 Mus culus galanin e
567	2.83	3.57	3.79	0.00	0.10	0.03	0.000	4.39	3.25	1.24	0.14	0.76	0.20	0.052	567 Mus culus antigen, B- receptor gene, plete cds
0114	1.16	1.04	0.96	0.08	0.75	0.18	0.030	1.24	1.34	1.29	0.00	0.89	1.30	0.221	0114 Mouse pa-casein mRNA, plete cds
6395	1.56	1.38	1.58	0.00	0.00	0.48	0.007	1.83	1.18	1.03	0.10	0.91	0.97	0.137	6395 Mouse a-fetoprotein PI gene
6762	4.79	2.65	4.76	0.00	1.37	0.00	0.073	0.00	0.72	4.12	1.28	0.00	0.00	0.425	use interleukin 2 gene, exon 4
2740	1.19	1.33	1.36	0.79	0.43	0.15	0.072	1.21	0.99	1.46	0.00	1.01	0.34	0.077	2740 Mouse rotropin beta- unit (TSH-beta) e
3501	5.31	8.25	3.49	0.00	0.00	0.00	0.075	2.02	0.15	6.56	0.00	1.85	0.00	0.182	3501 Mus musculus secreted T protein (P500/TCA3; SIS- ϵ -psilon) NA, complete cds
8449	1.03	0.98	1.20	0.00	0.00	0.06	0.000	1.07	1.16	0.95	1.02	0.44	1.06	0.356	8449 Mouse Hox- protein mRNA, nd
9015	1.49	1.14	1.04	0.69	0.39	0.09	0.079	1.17	1.44	1.29	0.75	0.81	0.96	0.070	9015 Mouse somal protein L7 7) gene, plete cds
9395	0.76	1.38	2.00	0.00	0.00	0.00	0.078	1.63	1.09	2.66	0.08	1.08	0.92	0.119	9395 Mouse tidine-5'- ophosphate arboxylase NA, 3' end

0441 1.46 1.02 1.17 0.74 0.08 0.50 0.030 1.08 1.48 0.98 0.39 1.22 0.00.1720441 Mouse
onless potassium
nnel gene MK3

0644 1.30 1.55 1.52 0.87 0.42 0.61 0.005 1.47 1.05 1.46 0.32 0.79 0.95.0520644 Mouse
ic fibroblast
with factor (Fgfb)
NA, complete cds

4094 1.09 1.27 2.18 0.00 0.46 0.00 0.022 0.45 1.09 1.97 0.00 1.12 0.91.4274094 Mouse
noic acid-
onsive protein
) gene, complete

5617 5.22 6.29 1.57 0.00 0.00 0.00 0.038 3.23 6.22 0.93 0.00 1.07 0.00.11955617 Mus
culus mouse
t cell protease-4
NA, complete cds

5875 3.99 3.14 3.34 0.00 0.00 0.00 0.000 0.90 3.43 5.14 0.00 1.10 0.38.1055875 Mouse
C class I T3-d
e (H-2-d
lotype)

1591 1.13 0.78 1.30 0.53 0.59 0.38 0.025 1.02 0.98 1.28 0.39 1.70 1.17.9971591 Murine
O neutral
opeptidase 24.11
10/NEP) mRNA,
ative cds

1243 1.23 1.00 1.00 0.00 0.00 0.59 0.014 1.22 0.34 1.65 0.00 1.25 1.41.7701243 Mouse lens
r protein MP70
50) gene,

3128 1.27 1.33 1.20 0.89 0.00 0.00 0.032 1.00 0.77 0.78 1.00 1.32 1.48.0673128 Mouse
plete cds
eobox protein
X2) mRNA,

989 1.76 0.98 1.42 0.70 0.24 0.00 0.024 0.59 0.79 1.16 1.02 2.00 1.62.102989 Nkx-5.2 = NK-related
eobox gene (mice, E11.5
ryos, mRNA Partial, 1483 nt)
TRACTED 3'UTR)

662	1.03	1.38	0.83	0.00	0.21	0.35	0.009	1.49	1.29	1.35	1.41	0.67	0.97	181 s musculus ofetal antigen NA, partial cds
982	2.02	1.71	1.86	0.42	0.21	0.28	0.000	2.28	2.53	0.98	0.00	1.02	0.00	054 982 Mus culus Balb/c roendothelin-1 e, promoter on
210	5.68	14.95	9.70	0.00	0.00	0.00	0.012	6.61	4.29	14.29	0.00	0.00	0.00	080 210 Mus culus elastin mRNA, plete cds
932	1.42	1.13	1.28	0.86	0.16	0.48	0.024	1.40	1.30	0.87	0.00	0.80	1.32	313 932 Mus musculus follicle ulating hormone beta subunit H-beta) gene, complete cds
443	1.24	0.89	1.26	0.00	0.07	0.03	0.001	1.11	1.51	1.21	0.13	0.70	1.82	480 443 Mus culus proto- ogene protein c- (c-ros) mRNA, plete cds
252	0.92	1.07	1.19	0.00	0.20	0.32	0.002	1.19	1.05	1.34	0.95	1.09	0.73	714 252 Mus culus abotropic amate receptor 8 luR8) mRNA, plete cds
513	1.01	1.45	1.29	0.68	0.18	0.72	0.029	1.09	1.29	1.12	0.00	0.99	0.12	067 513 Mus culus KRAB-zinc er protein 79 79) mRNA, ial cds
005	3.41	10.25	4.71	0.00	0.00	0.00	0.043	0.00	7.73	9.70	7.06	0.00	0.00	412 s musculus tbc 1 NA, complete cds
245	0.89	1.28	1.19	0.00	0.00	0.00	0.001	1.21	1.16	1.11	0.00	1.24	0.00	145 245 Mus culus fos-related igen-1 (Fra-1) NA, complete cds

353	1.01	1.29	1.30	0.00	0.49	0.00	0.005	1.07	0.99	1.36	0.00	1.07	0.12 .105	353 Mus musculus protein sphatase 2A B'alpha3 regulatory unit mRNA, partial cds
189	1.11	0.90	0.86	0.20	0.00	0.65	0.030	1.40	1.23	1.29	1.10	0.83	1.74 .777	189 Mus musculus pancreatic peptide/neuropeptide Y/peptide receptor gene, complete cds
650	1.29	1.15	1.17	0.17	0.64	0.00	0.009	1.28	1.30	1.17	0.75	0.85	0.35 .020	650 Mus musculus neurexophilin xph-2) gene, large exon and 3' of the intron, and partial cds
513	0.81	1.09	1.05	0.51	0.36	0.59	0.010	1.02	1.00	1.00	1.23	0.99	1.35 .150	513 Mus musculus Rho- associated, coiled-coil forming protein se p160 ROCK-2 mRNA, complete

418	0.96	1.45	1.72	0.00	0.78	0.44	0.037	2.23	1.04	1.13	1.04	0.51	0.00 .123	418 Mus culus Netrin-1 rin-1) mRNA, plete cds
137	1.82	1.59	1.58	0.00	0.72	0.95	0.020	1.73	1.03	1.35	0.36	0.97	0.65 .057	137 Mus culus T2- herin mRNA, ial cds
208	1.92	19.41	5.95	0.00	0.00	0.00	0.007	8.28	13.48	38.84	0.00	0.00	0.00 .099	208 Mus culus neurogenin gn3) gene, plete cds
700	5.11	3.18	3.26	0.00	0.00	0.00	0.004	5.33	1.30	4.75	0.70	0.00	0.36 .054	s musculus serine teinase inhibitor 6 16) mRNA, plete cds.
724	8.41	5.29	5.43	0.00	2.24	0.00	0.017	1.15	1.53	0.00	0.85	0.00	0.00 .324	s musculus ative sphinositide 5- sphatase type II NA, complete

755	2.04	2.40	1.68	0.82	1.17	0.10	0.023	0.83	1.63	1.18	0.00	0.82	0.71	.110	senger RNA ment for mouse rferon beta (type oding for the c- inal part.
479	1.64	1.70	1.36	0.32	0.08	1.17	0.039	1.03	0.58	1.19	0.67	0.97	0.00	.317	use mRNA ment for serum loid A (SAA) 3 tein.
123	1.69	1.82	1.59	0.43	0.37	0.99	0.006	1.01	1.70	2.45	0.04	0.99	0.56	.075	use mRNA for inal xynucleotidyltran ase (TdT).
260	1.15	1.82	2.55	0.00	0.00	0.00	0.011	3.64	1.63	0.95	1.05	0.00	0.21	.130	use Y mosome RNA script expressed estis (pYMT2/B).
640	1.17	27.06	1.14	0.00	0.00	0.00	0.000	2.21	3.04	6.96	0.00	0.00	0.00	.050	640 Mouse NF- ene for middle- ecular-mass rofilament protein
115	1.83	1.63	1.23	0.00	0.00	0.17	0.001	1.15	1.02	0.98	0.15	0.24	1.02	.105	use mRNA for E- herin (=
															morulin, = L- = cell-CAM /80, = Arc-1).
368	3.83	11.36	2.49	0.00	0.00	0.00	0.016	0.00	0.05	16.10	27.29	1.95	0.00	.693	rine mRNA for c- proto-oncogene.
540	1.07	1.23	1.56	0.34	0.00	0.47	0.007	1.08	1.38	1.02	0.38	0.98	0.65	.078	540 Mouse c-abl e exon 1 of type RNA
538	7.03	5.05	0.26	0.00	0.00	0.00	0.036	0.00	1.26	14.07	26.77	0.00	0.74	.702	rine mRNA for -1.4 protein.
664	1.47	2.17	1.59	0.13	0.76	0.90	0.023	1.13	1.20	0.25	0.00	0.18	1.10	.400	use mRNA for N- protein (exons 1 art.).
926	1.00	1.00	1.56	0.00	0.00	0.00	0.003	1.22	1.11	1.17	1.17	0.00	0.00	.117	use mRNA for eticulin.

972	1.63	2.07	1.66	0.55	0.66	0.85	0.003	1.99	1.04	1.95	0.79	0.00	0.96.067	use mRNA for a-adaptin (C).
830	1.42	1.63	1.21	0.56	0.00	0.00	0.005	1.12	1.07	0.87	0.93	0.23	1.82.956	rine mRNA for roendocrine tein 782.
510	4.28	8.23	5.27	0.00	2.36	0.00	0.023	6.86	5.28	0.00	0.00	0.00	0.00.123	use mRNA for 3.3 PRI script.
683	4.96	35.96	6.00	0.00	0.00	0.00	0.001	1.44	32.38	0.00	0.00	0.00	0.00.136	usculus T NA.
991	2.51	3.70	4.67	0.00	0.00	0.00	0.004	2.85	9.53	3.06	0.00	0.00	0.00.079	991 Mouse NA for homologue he rat T cell erentiation marker

424	2.42	0.95	2.24	0.00	0.00	0.00	0.016	1.05	2.97	2.58	0.00	0.35	1.76.134	424 Mouse NA for gamma ptin
315	1.56	5.39	4.68	0.00	0.33	0.44	0.038	5.99	1.85	1.68	0.00	0.00	0.00.088	usculus mRNA CAAT-box DNA ing protein unit A (NF-YA) tial).
781	0.99	1.53	1.53	0.06	0.49	0.78	0.030	1.10	1.36	1.13	0.72	1.01	0.72.040	781 M.musculus 2 gene
044	1.26	1.03	1.66	0.71	0.40	0.27	0.019	1.10	1.23	1.59	0.97	0.47	0.79.053	044 M.musculus NA for protein C
349	2.20	1.22	2.82	0.00	0.78	0.00	0.027	6.12	2.09	1.98	0.00	0.00	0.00.067	349 M.musculus NA for transferrin ptor
960	1.01	56.29	4.13	0.00	0.00	0.00	0.000	6.85	17.60	0.00	0.00	0.00	0.00.191	usculus mRNA ribosomal protein
876	0.96	1.54	0.93	0.00	0.00	0.17	0.006	2.15	1.64	1.04	3.04	0.00	1.10.823	876 Murine 2 mRNA for 2 protein

940	1.01	0.88	0.80	0.43	0.24	0.19	0.003	1.03	1.55	1.66	0.99	1.15	1.06	use mRNA for a with factor-
285	2.49	1.96	1.92	0.00	0.00	0.00	0.000	1.64	2.00	0.82	0.00	1.18	0.10	immediate y gene (3CH134).
449	1.44	1.75	1.43	0.00	0.00	0.00	0.000	1.58	1.36	0.64	0.00	0.00	2.12	285 M.musculus for HC1 locus
783	4.50	3.48	4.48	0.47	0.00	1.53	0.003	3.31	3.70	0.00	0.00	0.00	0.00	449 M.musculus NA for calcyclin
061	1.34	1.51	1.45	0.74	0.41	0.56	0.007	1.55	1.08	1.02	0.98	0.29	0.65	NA VCAM-1
620	4.60	22.94	3.86	0.00	0.00	0.00	0.000	6.71	34.28	0.00	0.00	0.00	0.00	NA usculus HCNGP
018	1.41	1.13	1.17	0.29	0.53	0.87	0.024	1.27	1.39	0.72	0.85	0.75	2.28	NA usculus mRNA
295	0.99	1.24	1.01	0.00	0.24	0.65	0.079	1.17	0.69	1.28	0.58	1.57	1.06	inhibin beta-B unit.
557	1.74	2.37	1.37	0.96	0.00	0.00	0.026	0.00	1.04	3.07	1.06	0.00	0.00	018 M.musculus NA for Id4 helix- helix protein
304	1.82	1.67	0.75	0.66	0.00	0.00	0.040	0.08	1.25	1.57	1.25	1.36	0.00	295 M.musculus e for anocortin 5 ptor
339	1.68	1.68	1.68	0.00	0.31	0.70	0.003	2.01	1.98	0.00	0.29	0.19	1.30	usculus cadL NA.
320	1.32	1.81	1.76	0.73	0.00	0.39	0.009	1.15	1.58	0.85	0.51	0.33	1.70	usculus Six 1 NA.
577	1.23	1.01	0.81	0.48	0.28	0.75	0.049	1.12	1.06	1.33	2.09	0.99	0.93	usculus KIS NA.
601	1.16	1.37	0.91	0.00	0.20	0.42	0.006	1.21	1.25	1.20	0.22	0.74	1.09	usculus mRNA K-glypican. usculus PTX3 NA.

932	1.54	1.19	1.07	0.66	0.34	0.38	0.010	2.12	0.93	1.88	1.12	0.64	0.33.092	usculus mRNA ryanodine ptor type 1.
368	5.46	35.26	0.09	0.00	0.00	0.00	0.007	0.00	36.57	54.33	0.00	0.00	0.00.131	usculus putative scription factor.
352	1.19	1.26	1.17	0.10	0.35	0.32	0.000	1.47	1.05	1.24	0.64	0.28	0.95.053	usculus mRNA Bpx protein.
664	1.32	1.29	1.09	0.82	0.70	0.17	0.033	1.51	1.46	0.91	0.00	0.42	1.10.103	664 M.musculus NA for ubiquitin- jugating enzyme M2
606	1.33	1.60	1.31	0.00	0.00	0.00	0.000	1.03	1.20	2.07	0.97	0.82	0.00.131	usculus mRNA Ott protein, clone 7.
719	1.64	1.19	1.15	0.59	0.00	0.66	0.025	1.98	0.98	1.47	0.51	0.00	1.02.079	719 M.musculus ovirus restriction e Fv1
817	1.16	1.42	1.57	0.55	0.00	0.27	0.005	1.39	1.65	0.96	1.04	0.00	0.18.071	817 M.musculus NA for aphorin F
581	1.13	0.64	1.18	0.10	0.00	0.14	0.007	1.09	1.15	1.36	0.91	0.00	1.65.511	581 M.musculus gene encoding ocyte-derived seven smembrane domain receptor. in B6
500	1.36	1.92	1.10	0.94	0.34	0.21	0.044	0.79	1.06	0.63	0.53	1.13	5.00.379	use glandular ikrein gene.
848	6.67	4.44	5.83	0.00	0.00	0.03	0.001	2.48	0.00	2.96	1.25	0.75	0.00.310	use int-2 gene.
224	0.91	1.18	1.37	0.00	0.14	0.53	0.011	1.18	1.28	0.97	0.17	1.15	1.03.330	usculus mRNA 5HT1E beta tonin receptor.
103	0.95	1.40	1.05	0.24	0.19	0.28	0.003	1.07	1.16	1.18	0.54	1.08	0.61.085	usculus Mox-1 NA.
143	1.19	1.38	1.28	0.15	0.67	0.54	0.007	1.20	1.71	0.93	0.01	0.16	1.07.099	usculus ALK-6 NA, complete
532	1.23	1.37	1.27	0.00	0.00	0.00	0.000	1.11	1.29	0.65	1.10	0.90	0.00.418	usculus mRNA follistatin.

166	0.95	1.35	1.34	0.00	0.00	0.26	0.002	1.71	1.51	1.05	2.29	0.00	0.56	0.544	166 M.musculus lb/c) mRNA for agen IV alpha 3 in
168	1.00	1.35	1.05	0.05	0.82	0.06	0.047	1.26	1.68	1.00	0.55	1.12	0.77	0.128	168 M.musculus NA for collagen lpha 5 chain
147	1.42	1.63	1.08	0.00	0.07	0.00	0.007	0.98	0.66	1.18	1.17	0.04	1.02	0.639	147 M.musculus e for cell esion regulator